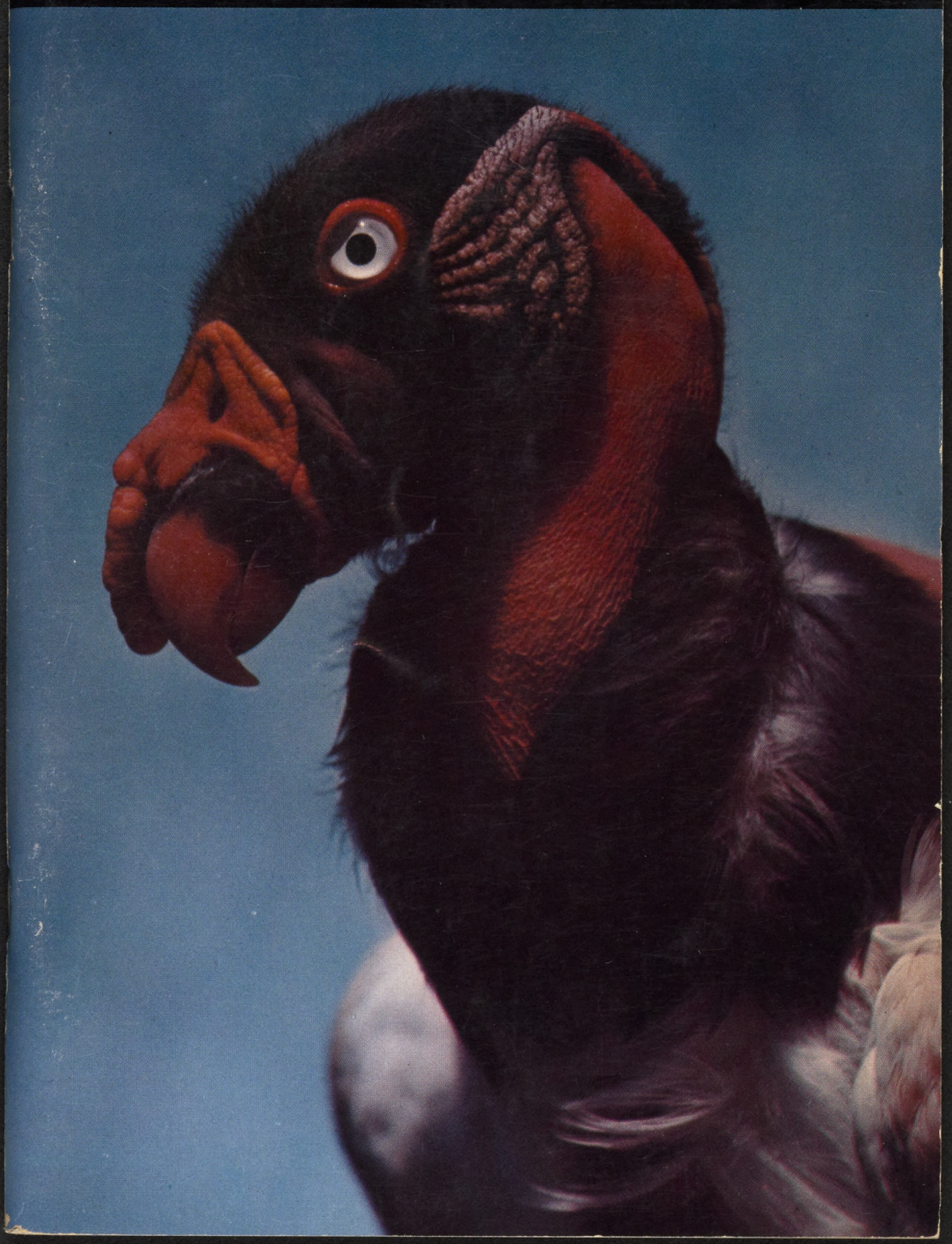
SAN DIEGO ZOO




FROM LOS ANGELES
US 101
FROM RIVERSIDE
US 395
US 80
DEL RIO
FROM PHOENIX
TEXAS
ALT US 80
CAMINO
FREEWAY
EL CAJON
MIDWAY
OLD TOWN
WASHINGTON
UNIVERSITY
ROSECRANS
BARNETT
PACIFIC HWY.
FREEWAY
LAUREL STREET
SIXTH AVENUE
CABRILLO
ZOO ENTRANCE
7
BALBOA PARK
PARK BLVD
PERSHING DR.
30TH STREET
HARBOR DRIVE
1
SAN DIEGO
2
3
6
4
5
BROADWAY
12th AVE
MARKET STREET
IMPERIAL AVENUE
NATIONAL
FERRY
FROM TIJUANA
HARBOR DR.
US 101
28th
ORANGE AVE.
CORONADO
BAY
PACIFIC OCEAN
STRAND FROM TIJUANA
1 AIRPORT
2 CIVIC CENTER
3 R.R. STATION
4 CHAMBER OF COMMERCE
5 TOURIST BUREAU
6 AUTO CLUB
7 BUS STOP — LINE NO. 7
MAIN THOROUGHFARES AND BUS LINES LEADING TO
SAN DIEGO ZOO
ZOOLOGICAL SOCIETY OF SAN DIEGO

San Diego Zoo

BALBOA PARK

San Diego, California



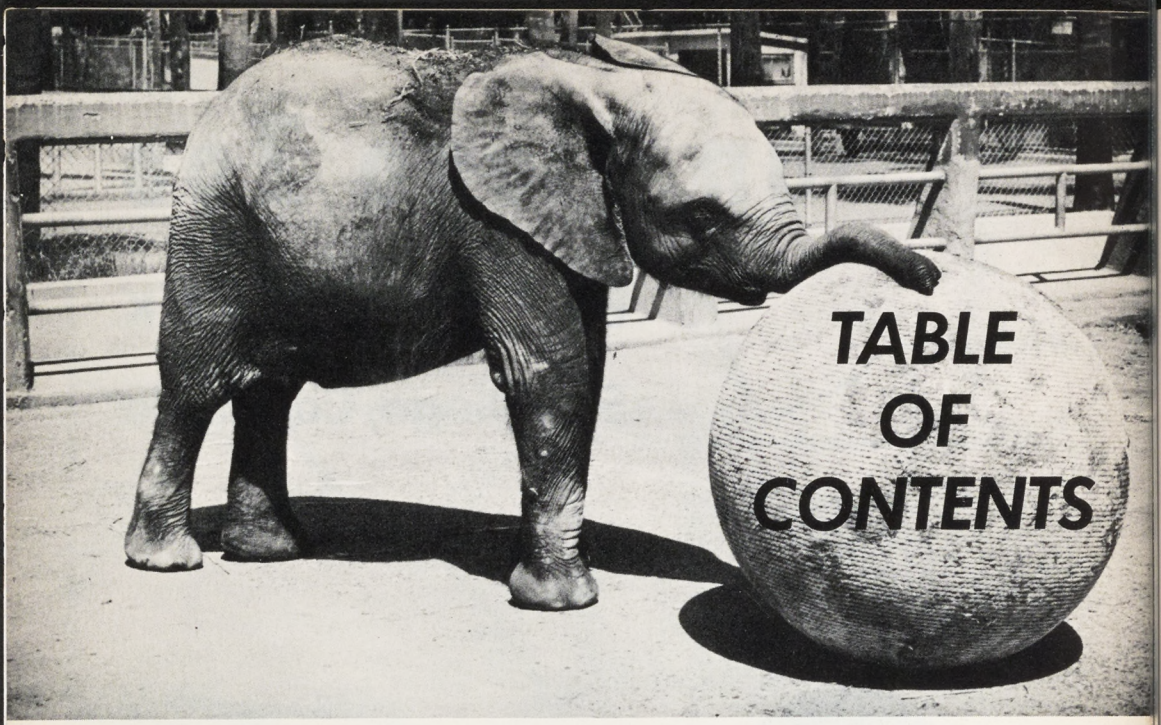
Banjo, the happy chimp,
welcomes you to the Zoo.

OFFICIAL GUIDE BOOK

Published by the

Zoological Society of San Diego, Inc.

LITHOGRAPHED IN SAN DIEGO BY FRYE & SMITH, LTD.



Peaches, our young AFRICAN ELEPHANT,
is always eager to entertain.

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Photographs, unless otherwise accredited, by
Richard Van Nostrand and G. E. Kirkpatrick

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INTRODUCTION

The San Diego Zoological Gardens are unique in providing *year round* outdoor animal exhibits in Balboa Park.

Here, in this city of half a million, the wind and weather are tempered by the Pacific Ocean with the result that summers are cool and winters warm. There is only ten inches of rainfall a year, wind velocities are low and there is an abundance of sunshine.

The Zoo is one of the largest in the world exceeding most others in numbers of animals exhibited and species—different kinds of animals represented. Its 200 acres of canyons and mesas are interlaced by paths and roads with animal enclosures located so as to permit best visibility for pedestrian and bus rider. Annual attendance approximates one and a half million, with a ratio of three children to five adults.

The Zoo is managed by the Zoological Society of San Diego, Inc., which was incorporated in the State of California and the Articles filed in the office of the Secretary of State at Sacramento on December 11th, 1916. The Corporation was formed for scientific research, and benevolent purposes. An ordinance of the City of San Diego, #1845 new series, grants the Zoological Society of San Diego the right to occupy, maintain and operate zoological gardens in Balboa Park, committing to said Society custody and maintenance of Zoological exhibits therein. The most recent new series ordinance #6605 was adopted by the Council of the City of San Diego on August 2, 1955, enabled by Section 77a of the Charter of the City of San Diego as amended.

The governing body of the Society is a Board of eleven directors, with a President, First and Second Vice-Presidents, a Secretary and a Treasurer. They appoint a Managing Director who employs the operating

The new Zoo entrance is framed by palms, ferns and other subtropical plants.



staff. The Society operates on a fiscal year, July 1st to June 30th, and its annual meeting is held on the first Wednesday following Labor Day. The Board of Directors meets monthly throughout the year, and makes policy decisions. These are its members for the 1955-'56 year: Milton G. Wegeforth, President; J. P. Scripps, First Vice President; Carl L. Hubbs, Ph.D., Second Vice President; Fred Kunzel, Secretary; Robert J. Sullivan, Treasurer; Anderson Borthwick; Howard L. Chernoff; E. Minton Fetter, M.D.; Gordon Gray; L. M. Klauber, LL.D.; L. T. Olmstead; and Albert Eugene Trepte.

Dedicated to Children

Founders of the San Diego Zoo were: Harry M. Wegeforth, M.D.; Paul Wegeforth, M.D.; Fred Baker, M.D.; J. C. Thompson, U.S.N.,M.C.; and Frank Stevens. Harry M. Wegeforth was elected President in 1916 and held this office until his death, June 25th, 1941.

Under Dr. Wegeforth's guiding hand, with personal funds and contributions from his friends, a very small Zoo grew into a world famous institution. It quickly became apparent that "Dr. Harry" was inspired by his love of animals and children and through the years the Zoo has been dedicated to the children of San Diego. Admission to the Zoo is available without charge to all children below the age of sixteen and to all high school students regardless of age in the City and County of San Diego.

A full and complete account of the founding and development of the San Diego Zoological Gardens appears in a book, "It Began With A Roar", by Neil Morgan, quoting the letters, transactions and papers of Harry Milton Wegeforth, M.D.

Trained animal performances are featured daily in Wegeforth Bowl, an amphitheatre directly west and south of the reptile house. It seats 1,500 and the shows last approximately thirty minutes. They are available to all Zoo visitors without charge.

The Zoo is known, in particular, for its rich collection of psittacine birds, the large primate colony (from the standpoint of species represented), one of the world's finest and largest reptile collections, and its exhibits of many particularly rare species.

The Biological Research Institute And Zoological Hospital

The unique two floor hospital and laboratory building has four major activities; the Quarantine and Hospital Section, a Nursery for the care of young animals, a Laboratory Section where causes of illness and death are determined and, separately, Research Laboratories housing individual research workers on the upper floor.

A grant-in-aid of $3,500.00 for a ten month period, made available through the Ellen Browning Scripps Foundation, is offered graduate or post-doctorate research workers, at the direction of the following Research Committee: Q. M. Stephen-Hassard, D.D.S., Chairman; Joshua L. Baily Jr., Sc.D.; Gordon H. Ball, Ph.D.; Howard A. Ball, M.D.; A. M. Burlingame; Raymond B. Cowles, Ph.D.; Fred Crescitelli, Ph.D.; E. Minton Fetter, M.D.; Denis L. Fox, Ph. D.; R. D. Harwood, Ph.D.; Hall G. Holder, M.D.; Carl L. Hubbs, Ph.D.; L. M. Klauber, LL.D.; Rawson J. Pickard, M.D.; Erling R. Quortrup, D.V.M.; Dwight L. Ryerson, Ph.D.; J. A. Gengerelli, Ph.D.; Francis M. Smith, M.D.; Arne N. Wick, Ph.D; M. Wiener, M.D.; and Claude E. Zobell, Ph.D. Interested biologists should apply to Anthony W. Sylstra, D.V.M., Secretary.:

Research rooms and physical facilities are offered workers in biological science without charge if their problems and qualifications are acceptable to the Research Committee.

Veterinarians, physicians and research workers in biological sciences are encouraged to consult with the staff and use the facilities of the hospital and laboratory. Interested groups and individuals may visit the hospital and laboratory by appointment.

Unique Setting

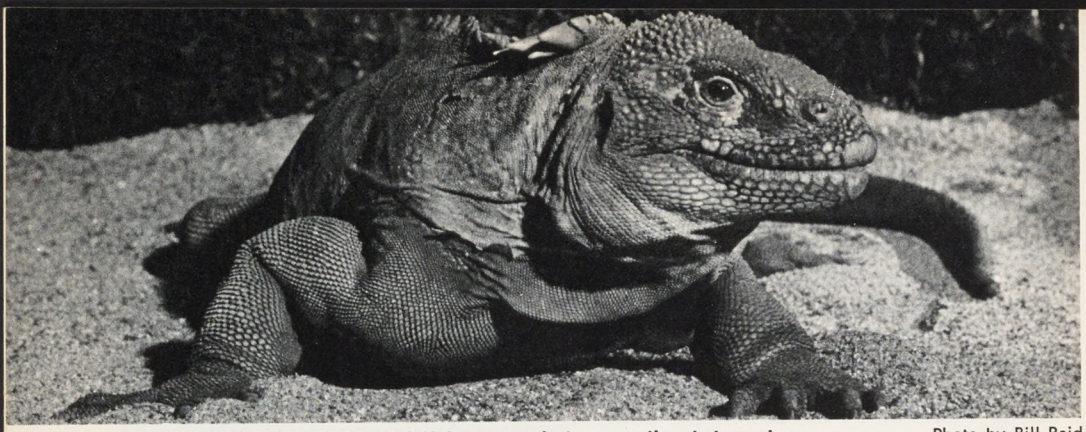
The area now occupied by the Zoological Gardens was taken over by the Society in 1922 with the sanction of the City Parks and Recreation Department. Dr. Wegeforth's plans utilized the unusual contours of mesas and canyons, and included the use of many exotic plants, as well as unusual and unique barless animal enclosures. The roads were built to accommodate sightseeing buses which has led to the now world renowned "Guided Bus Tours." Large contributions were made by H. A. Astlett, J. W. Coffroth, Joseph Dryer, Allan Hancock, Helen Blanche Hoopes, L. M. Klauber, Fred Lewis, Jino McConville, Amy Putnam and Ann Putnam, Ellen Browning Scripps, Robert G. Scripps, Mr. and Mrs. K. W. Stott, Rachael Wegeforth, Anne Zimmerman and many others. It was through the generosity of these many philanthropists that the Zoo grew and prospered.

Mrs. Belle J. Benchley became associated with the Zoo in 1927. Dr. Wegeforth, together with Mrs. Benchley and an industrious and devoted Board of Directors, put the early plans into effect. Mrs. Benchley's "My Life In a Man Made Jungle", "My Friends, The Apes" and "My Animal Babies", Little, Brown & Co., give many intimate facts about the Zoo.

Income for the operation of the Zoo is derived, in part, from a special city tax as described in Section 77a of the City Charter as amended April 22, 1941, effective May 8, 1941. It provides two cents on each hundred dollars of assessed valuation of the real and personal property within the city, to be used exclusively for the maintenance in Balboa Park of Zoological exhibits. This accounts for approximately 15% of the Zoo's income; from the guided bus service, 15%; from public services, including restaurant and refreshment stands, approximately 15%; paid admissions, 50% with 1% coming from the County of San Diego, and the balance from bequests, sale of animals, and memberships amounting to about 4%.

The Zoological Hospital and Biological Institute.





This BARRINGTON ISLAND IGUANA keeps an alert eye on the photographer. Photo by Bill Reid

Zoo School

A guided lecture service, provided by the Zoo to second grade students in City and County schools, supplements their studies of animals of the world. The service includes transportation to and from the Zoo in the Zoo's own bus. An elementary course in zoology is given young students during the summer season and official zoo lecturers are available to the county schools for all classes. This program is conducted under the guidance of an Education Committee. Following are its members: T. Malcolm Brown, Chairman; Don Chamberlin, James H. House, Mary E. Rohrer, Darlene Rozean, and Mary Taylor.

Upper division zoology credit is given college students majoring in zoology for special courses at the Biological Research Institute, with instruction given by the veterinarian and medical technologist.

Publications And Membership

Publications of the Zoo are both popular and scientific. Zoonooz, a popular monthly publication of approximately twenty pages with a circulation of five thousand, is available at $2.00 annually, $5.00 for three years, or 20c per issue. The scientific bulletins of the Society are priced on the basis of printing and distribution costs. Twenty-seven bulletins have been issued. The Society has recently sponsored the publication of "Rattlesnakes: Their Life Histories, Habits, and Influence on Mankind" by L. M. Klauber, LL.D., University of California Press, in two volumes. Many scientific papers have originated in the Biological Research Institute, authored by research workers and staff.

Membership in the Zoological Society of San Diego, Inc., is available to those interested in the purposes of the Society. Annual individual membership is $5.00, and $7.50 for family memberships. Membership includes a subscription to the monthly publication, "Zoonooz", admits the member to the Zoo without charge and in addition gives him ten passes for guests. It also entitles the member to obtain any and all publications of the Society at a discount and permits him to participate in the affairs of the Society at the annual meetings. Other classes of membership are: Annual Sustaining Membership, $25.00; Life Membership, $200.00; Patrons, $1,000.00; and Benefactors, $10,000.00.

Bequests

Members and friends of the Zoological Society of San Diego often have expressed a desire to give financial aid to the Zoo to assist in its growth and development. A bequest is a good means of giving this support. Following are suggested legal forms that may be considered:

GENERAL:

I do hereby give and bequeath to the Zoological Society of San Diego Inc., a California non-profit corporation, the sum of $..... dollars to be used at the discretion of the Society.

SPECIAL:

I do hereby give and bequeath to the Zoological Society of San Diego Inc., a California non-profit corporation, the sum of $..... dollars, and I direct that said sum be used for ..... (*here should follow the special purpose for which money is to be used*).

NOTE: ***All contributions are deductible from income tax.***

GENERAL INFORMATION

ENTRANCE:

The entrance gate is located on Zoo Drive in the heart of Balboa Park.

Entrance Hours:

Day after Labor Day thru October ..... **9 a.m.-5 p.m.**
November thru February ..... **9 a.m.-4:30 p.m.**
March thru June ..... **9 a.m.-5 p.m.**
July thru Labor Day 9 a.m.-6 p.m.

Visitors must be off the premises by dark.

PARKING FACILITIES:

Free parking is available for Zoo patrons on a lot just south of the entrance and to the east across the street from the entrance accommodating 1850 cars.

EATING PLACES:

The San Diego Zoo has an excellent restaurant, serving dinners, short orders and sandwiches. Counter, fountain and table service are available.

Hours:

Day after Labor Day thru June ..... **9 a.m.-5 p.m.**
July thru Labor Day ..... **9 a.m.-6:30 p.m.**

Refreshment stands are placed throughout the grounds. Soft drinks, candy, ice cream, peanuts, guide books, film, sandwiches and other food may be purchased at these stands.

Picnic grounds within the Zoo are located to the south and north of the entrance. At the south picnic area free gas is provided.



HIPPOPOTAMUS mouths are built for big meals.

SOUVENIRS:

Gifts, postcards, and zoo publications are sold at the gift shops, camera and refreshment stands.

CAMERA STAND:

Films, cameras, camera rentals, postcards, publications, and lockers for checking personal belongings are among many of the conveniences offered by this unit on the main plaza.

GUIDED BUS TOURS:

Every few minutes one of ten buses departs on a 50-minute, three-and-one-half-mile trip through the Zoo. Experienced driver-guides describe most of the animals (90% of those at the Zoo) which can be seen by riders on the buses.

Bus schedule:

Day after Labor Day thru June ..... 9 a.m.-4 p.m.
July thru Labor Day ..... 9 a.m.-5:30 p.m.

ANIMAL ACTS:

Trained animal acts are presented in the Wegeforth Bowl on A-Mesa daily.

Schedule:

Day after Labor Day thru June—Daily ..... 2 p.m.
Saturday, Sunday and Holidays all year, and every day July through Labor Day.....11 a.m. and 1, 2 and 3 p.m.

ADMISSION:

Adults 50c and children to 16 years and all San Diego City and County high school students with a valid I.D. card are admitted free.

MEMBERSHIP:

Members of the Zoological Society of San Diego are admitted free. Refer to introduction for further information pertaining to membership.

How To Reach The San Diego Zoo

AUTOMOBILE ROUTES:

Refer to the map inside front cover.

BUSES:

To those using public transportation: Take any eastbound Number Seven bus from any corner on Broadway from Harbor Drive to 11th Street. This bus runs along Park Boulevard and makes a ZOO STOP one block east of the entrance. Coming in from the northeastern sections of San Diego transfer at Park and University to the inbound (returning downtown) bus Number Seven.

To come to the Zoo from other sections of San Diego take your local bus that travels to the downtown area and transfer to the eastbound Number Seven bus on Broadway.



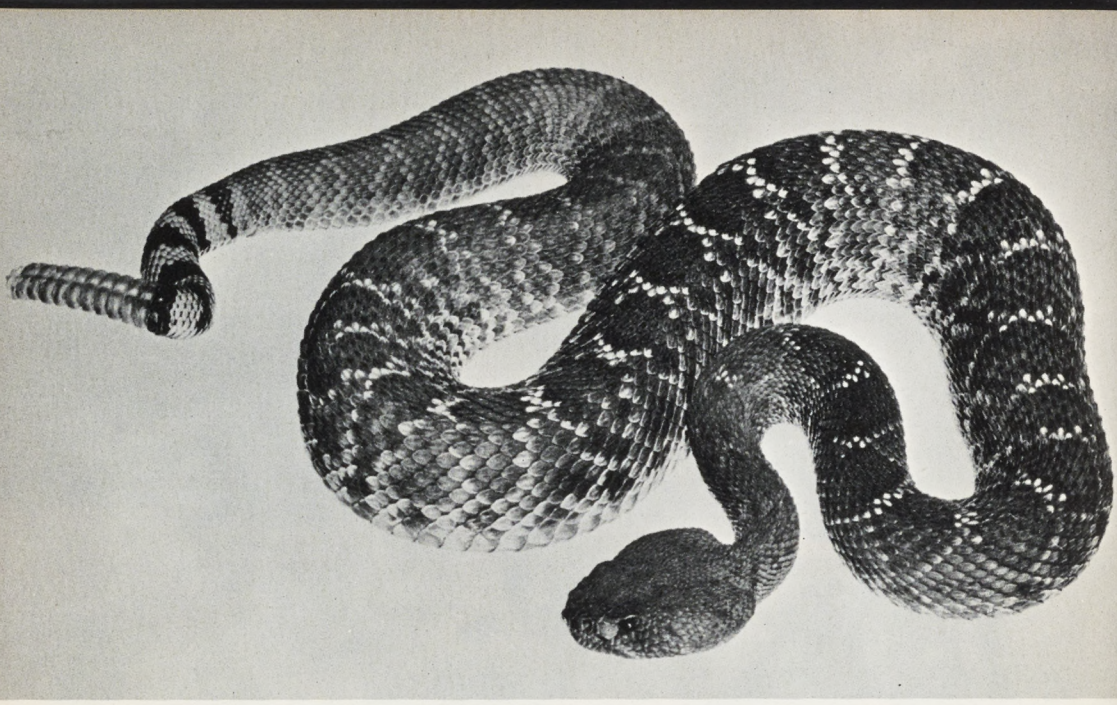


"Speed," a 526 pound GIANT TORTOISE, is about 100 years old and well able to take this boy for a ride.
Photo by D. David Bash

REPTILES

The reptile mesa displays one of the finest and largest reptile collections in the world. A large, rectangular, Reptile House exhibits most of the snakes that are shown here. Fifty-five glass-fronted cages, facing on an outside arcade, contain approximately 130 specimens representing 60 different kinds of snakes and lizards.

The interior of the reptile house provides a necessarily large amount of work space. There are areas for surplus specimens, quarantine room, laboratory, and a large room where thousands of rats and mice are raised each year as food for the snakes. Corridors containing the snake cages are radiantly heated to a temperature of 80° F. throughout the year.



The RED DIAMOND RATTLER is a pit viper and representative of thirty kinds of rattlesnakes in the United States.

Snakes

The majority of snakes on display are publicly fed dead rats or mice once each week on Thursday mornings.

Approximately 3000 different kinds of snakes are known to exist. Various kinds and degrees of specialization have been evolved by these animals. The many adaptations are reflected in the habits and structures of the snakes. The highest development in this group is achieved by the vipers and pit vipers of the Old and New World. Undoubtedly the best known of the New World pit vipers are the rattlesnakes. These, together with the water moccasin, copperhead and coral snake, make up the four dangerously venomous snakes occurring in the United States.

Pit vipers are so-called because of the presence of a conspicuous depression or pit in the side of the face. Inside this pit, and dividing it into two chambers, is a delicate membrane richly supplied with small nerves. The use of this pit was unknown for many years. Since all snakes lack external ears, hearing was speculated as the function of the pit. Eventually it was discovered that this organ was highly sensitive to heat and served its owner in the detection and location of warm-blooded prey such as birds and mammals. Using this organ, a pit viper has an uncanny ability to locate, focus on, and strike a victim without even seeing it.

Rattlesnakes are found only in the Western Hemisphere and range from southern Canada southward into northern Argentina and Uruguay in South America. The 66 species and subspecies presently known occur from sea level to elevations as high as 14,500 feet. This latter record is for a Mexican rattler. In California, rattlers are known to range as high as 11,000 feet and up to 10,000 feet in other western states. They are also found on several islands off the coasts of the Americas. Generally about a baker's dozen or more of the different kinds of rattlers are to be seen on display at the reptile house. These range in size from the large **Western Diamond Rattlers** and **Canebrake Rattler** to some of

the more diminutive forms such as the **Mottled Rock Rattler, Tiger Rattler** and **Massasauga** or **Pigmy Rattlers**. The largest species of rattler is the **Eastern Diamond Rattler** which may reach a length of 8 feet.

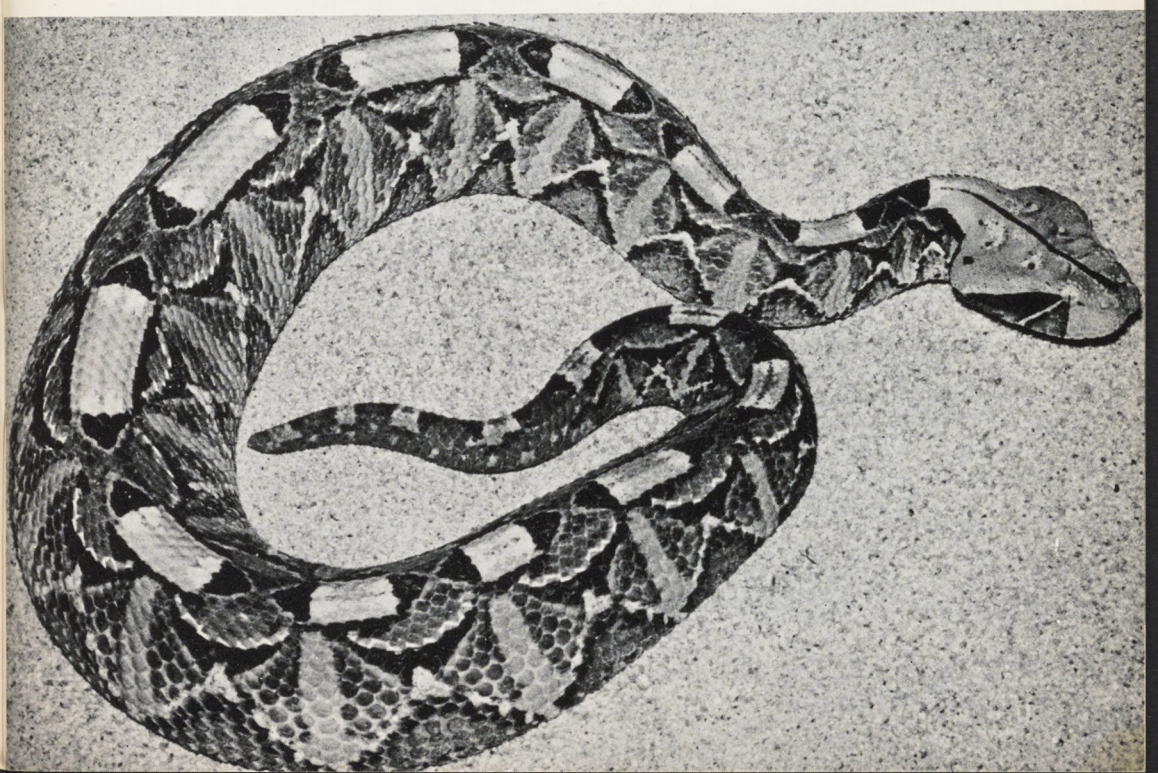
Frequently one hears that the age of a rattler may be determined by the number of segments in its rattle string. This is not true for the reason that each time the rattler sheds his skin he acquires a new segment for his rattle string. Shedding may occur from two to five times per year depending on the age and rapidity of growth of the individual snake.

In contrast to the majority of harmless snakes, rattlesnakes are ovoviviparous and bear their young rather than lay eggs. The young are perfectly formed miniatures of the parent when born. Babies are provided with fangs and venom and are fully capable of securing their own food and caring for themselves. There is no parental care of the young.

While pit vipers are found from the eastern edge of Europe to southeastern Asia and in the Western Hemisphere, true vipers occur only in the Eastern Hemisphere in Europe, Africa and eastward into the Malaysian region. Lacking only the facial pits, the true vipers are otherwise very similar to the pit vipers. Both types of snakes are distinguished by their long fangs which are mounted on a moveable jaw bone. This accommodates the great fang length by allowing this specialized hollow tooth to be folded against the roof of the mouth when not in use.

Many of the true vipers are tremendously heavy-bodied creatures, their girth being all out of proportion to their length. The **African Puff Adder** and the hideous looking but gorgeously colored **Gaboon Viper** of Equatorial Africa are noteworthy for their disproportionate girth as well as their sluggish dispositions. Smaller and more delicate appearing is the interesting little **Horned Viper** of the desert regions of North Africa and Arabia. The long, delicate horns over the eyes are purely ornamental and serve no useful purpose.

Noted for its beautiful color and pattern, the GABOON VIPER is one of the heavy-bodied African Vipers.



Like that of the pit vipers the venom of the vipers is extremely dangerous and has its principal effect upon the blood of the victim, variously causing hemorrhage, clotting, breakdown of the walls of blood vessels and dissolution of blood cells.

The cobras and their allies comprise the family Elapidae. Markedly different fang mechanisms and venom action distinguish this group of snakes from the vipers and pit vipers. Elapid snakes have short, permanently erect fangs and the venom acts principally upon the nervous system of the victim. Most of the cobras are quite nervous and easily upset and generally do not take well to captivity. The most obvious indication of such uneasiness may occasionally be seen in captive specimens in the form of a "hood." This structure is erected only when the snake is angry or annoyed in some way. The hood is formed by the spreading of the snake's skin over the elevated ribs of the neck region. Some cobra species have interesting designs on the neck which show to best advantage only when the hood is spread. The **Common Indian Cobra** is represented in the reptile collection by captive-bred specimens hatched here in October of 1946. The most awe inspiring of the cobra clan to be viewed here is the spectacular **King Cobra** of the Malaysian region. This is the largest species of the cobra group, the maximum recorded length being 18 feet 4 inches. Although most of our snakes are fed dead rats and mice, the **King Cobra** prefers snakes exclusively for its diet.

From the standpoint of number of years in captivity, the reptile collection boasts the oldest living cobra in the world. This magnificent specimen of **African Black Cobra** has been with us since October, 1928.

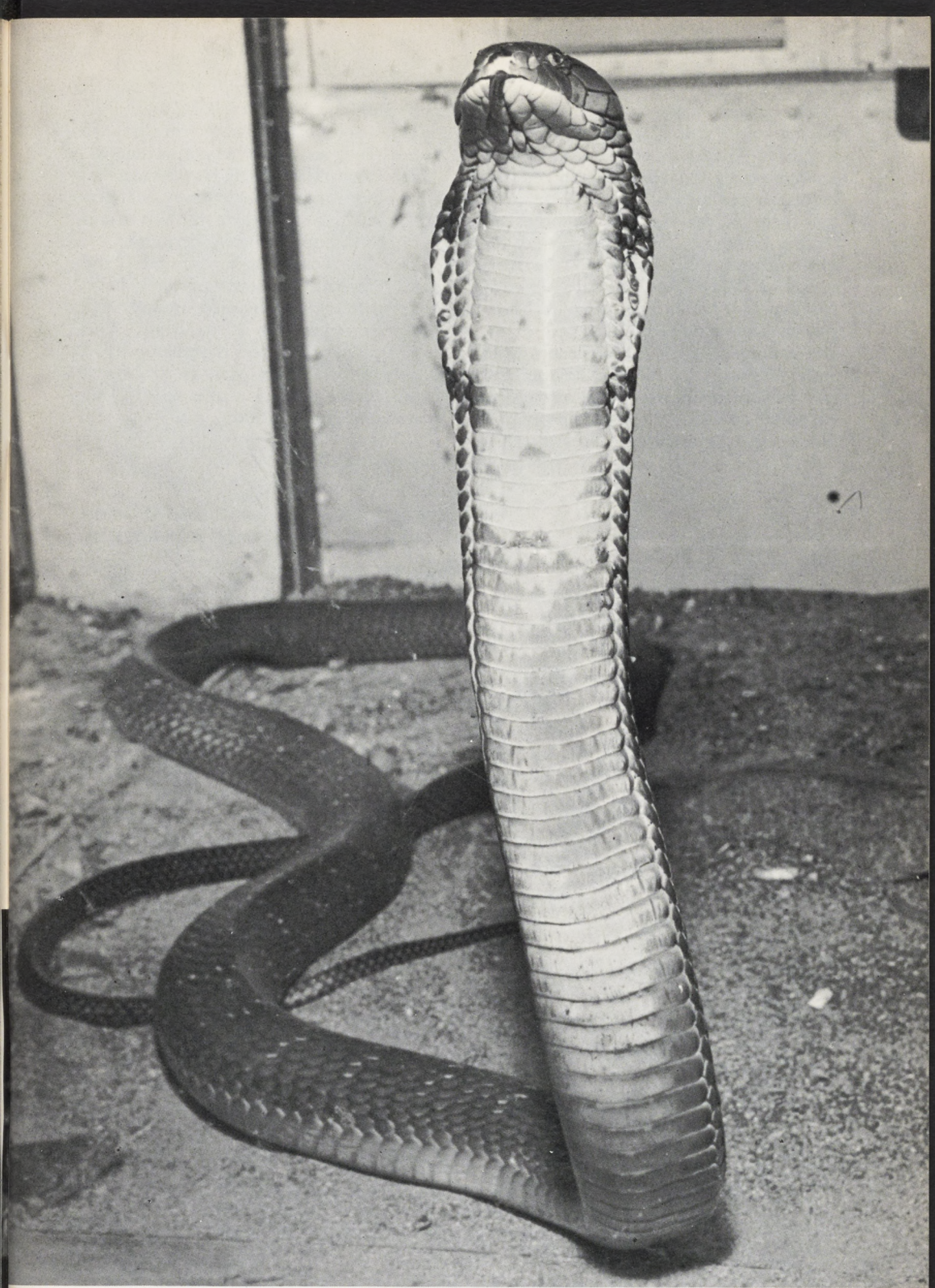
From Australia, where all the venomous snakes belong to the family Elapidae, comes the unspectacular but very deadly **Tiger Snake.** This species has the reputation of having the most potent venom of any poisonous snake in the world. Australia further has the doubtful distinction of being the only continent where venomous snakes greatly predominate over the harmless species.

The majority of the world's harmless snakes belong to a very large family, the Colubridae. Typical representatives of this group are such familiar American snakes as racers, bull snakes, gopher snakes and king snakes. The majority of snakes in this family are oviparous, that is they lay eggs. Of these egg laying species, the greater part merely dig a hole, deposit the eggs, cover and abandon them to unassisted incubation by ground temperatures and moisture. A very few species habitually remain with the eggs during incubation.

Other common representatives of the large family of harmless snakes are the garter and water snakes. Just behind the reptile house is a large moated enclosure or pit. This generally contains about 50 specimens of garter and water snakes. These are fed small dead fish once a week. The garter and water snakes differ from many harmless species in that they are ovoviviparous and bring forth living young. More than 90 young may be born to a single female water snake.

A number of representatives of the large family Colubridae may be seen on display in the Reptile House. Among these are the **Rat Snake, Pine Snake, Red Racer,** various species of **King Snake, Bull Snake** and **Gopher Snake.** This group of snakes includes many economically beneficial to man. Such snakes devour great numbers of rodent pests, including rats, mice and ground squirrels, which cause thousands of dollars worth of crop damage each year.

The giant snakes of the world belong to the family Boidae, which includes both the boas and the pythons. Boas have their principal headquarters in the New World with a few representatives in the Eastern Hemisphere. Pythons, on the other hand, are wholly confined to the Old World.

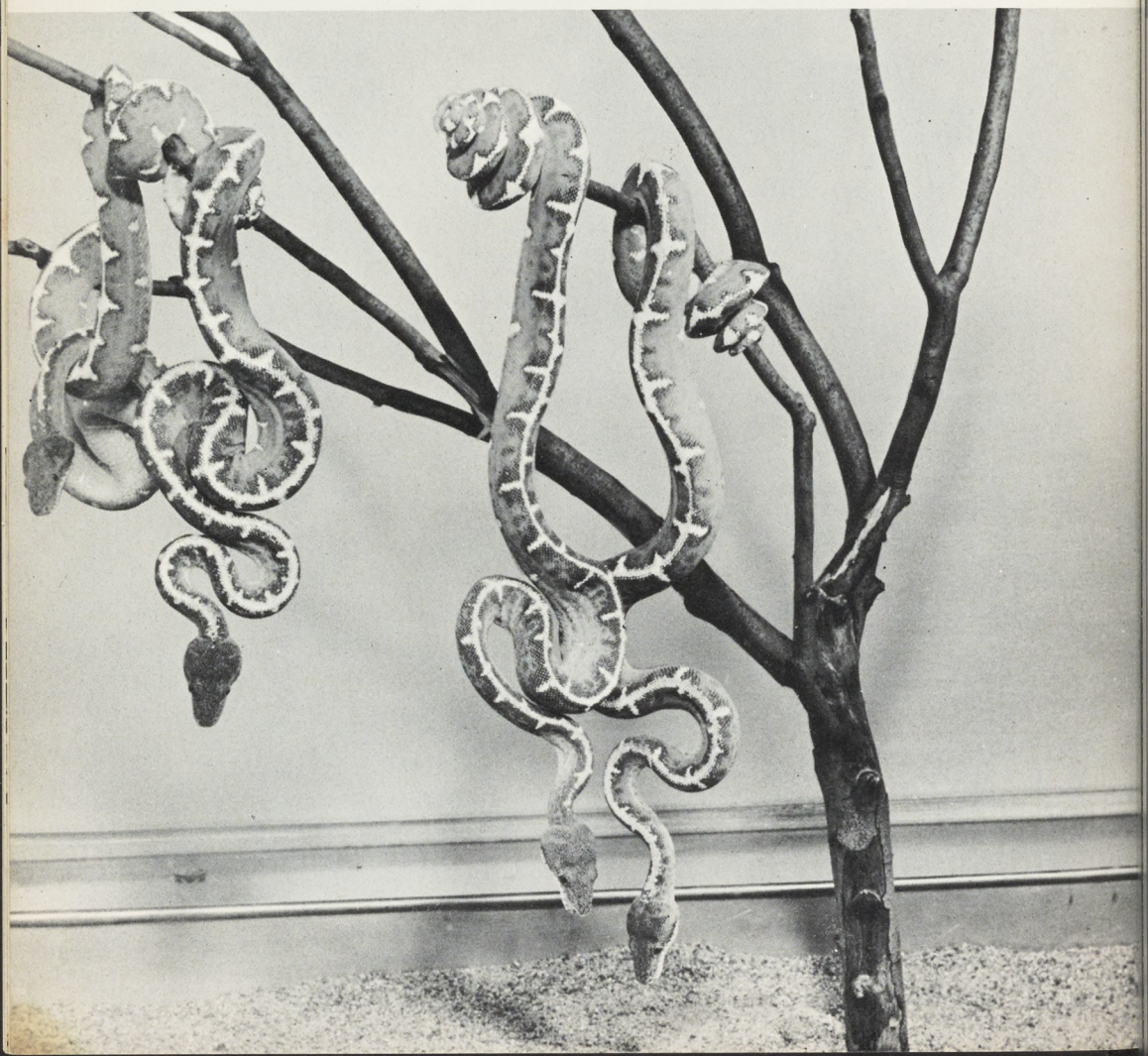


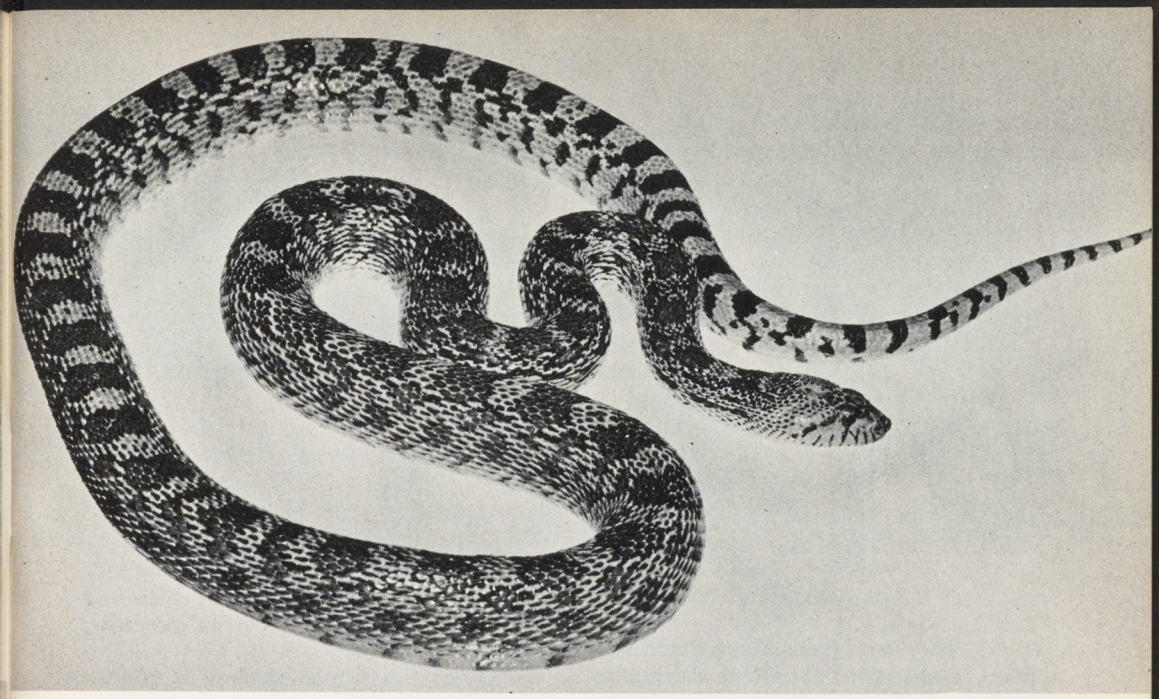
KING COBRAS are noted for their outstanding size, but they have a small and rather unspectacular hood.

The largest snake in the world, the **Reticulated Python,** is known to reach a length of 33 feet. It occurs from Burma south through the Malay Peninsula into Indonesia and the Philippines. Occasional specimens of the **African Python** may reach a length of 25 feet. This is also the maximum recorded length for the **Anaconda** or **Water Boa** of South America, the largest snake of the Western Hemisphere. Two small representatives of the Boa family occur in the western United States. These are the so-called **Rubber Boa** and the **California Boa.** Some of the most beautiful snakes on display at the Reptile House are the **Emerald Tree Boas** of northern South America. Like most nocturnal snakes, these have cat-like eye pupils. They are of course non-venomous. There is no truth to the tale that snakes with elliptical pupils are always dangerously venomous. Neither are all snakes with round pupils entirely harmless.

The boa constrictors of Central and South America are noted for their habit of constricting or wrapping around their prey and squeezing it to death. This means of securing food is common to all boas and pythons as well as to a great many smaller harmless snakes such as king snakes and gopher snakes.

EMERALD TREE BOA: A beautiful native of northern South America, the young are red rather than green.





SONORAN GOPHER SNAKES are harmless but economically valuable, because they live on mice, rats and other rodent pests.

Lizards

The reptile collection generally contains from 30 to 40 different kinds of lizards. Most of these are displayed in two large outdoor pits west of the Reptile House and between the enclosures containing the tortoises and turtles. A few lizards are also to be seen on display in the cages of the Reptile House. These include several species of desert lizards such as the **Desert Iguana, Whiptail Lizard, Spiny Lizard, Fringe-toed Sand Lizard** and **Horned Toads.** Also to be seen in the Reptile House are the **Gila Monster** and the **Mexican Beaded Lizard,** the only poisonous lizards in the world. The **Gila Monster** is found in southwestern New Mexico, Arizona, southern Nevada and southwestern Utah. Although it is venomous, it does not have the highly specialized venom injecting mechanism of the dangerously poisonous snakes. There are very few authenticated cases of death from the bite of a **Gila Monster.**

The uppermost of the large outdoor pits west of the Reptile House displays **Australian Lace Monitors, Cuban Iguanas,** and **Desert Tortoises** from the Mojave Desert of the southwestern United States. Various other species of monitors and iguanas may also be seen here from time to time, for the collection is never static. The Monitor group is composed of some 30 species ranging from Africa eastward through India to the Philippines and south to Australia. These include the largest of the living lizards, the **Komodo Dragon** of certain Indonesian islands. The **Komodo Dragon** may reach a length of about 10 feet. Monitor lizards are strictly carnivorous in their diet and eat a variety of animal food such as birds, small mammals, turtle and crocodile eggs. Our specimens are fed a weekly ration of chunks of horse meat and are also occasionally treated to dead mice and rats.

The **Cuban Iguanas** displayed in this pit are also good sized lizards, reaching a length of about 40 inches. From the **Lace Monitors** the iguanas may be distinguished by their serrated crest of scales down the middle of the back and tail. **Cuban Iguanas** feed upon meat and vege-



CUBAN IGUANAS are very primitive appearing but attractive members of a large family of Lizards, the Iguanidae.

tables. They are fond of lettuce and also plant blossoms and certain of the grasses and weeds that grow in their enclosure. These lizards also relish small dead rats and mice when these are offered. Our **Cuban Iguanas** have bred in this pit and have laid eggs which produced young, a very rare occurrence in captivity.

The most westerly of the outdoor enclosures or pits displays a variety of iguanid lizards. Here may be seen **Spiny-tailed Iguanas** from Tropical Mexico as well as desert islands in the Gulf of California; three species of Chuckwalla from the southwestern deserts of the United States and islands in the Gulf of California; **South American Green Iguanas** (or **Chinese Dragons** as they are known in the circus and sideshow trades); young captive-bred **Cuban Iguanas**; **Basilisks** from Mexico and Central America and **Collared Lizards** and **Desert Iguanas** from the southwestern United States. Nearly all of these lizards are principally vegetarian in their food preferences. They are fed lettuce daily and in addition are afforded the opportunity to forage for food of their own choice in the pit. This is furnished in the form of the leaves and blossoms of the Palo Verde trees growing in the pit as well as the grasses which grow there. During the warm summer months a careful scrutiny of the trees will often reveal several lizards high up in them browsing among the leaves and blossoms.

Of course none of the lizards in these outdoor pits are poisonous. However, all have strong jaws and sharp teeth and are very capable of inflicting a painful bite if molested.

Turtles

In addition to what is probably the world's largest collection of **Giant Tortoises,** about 40 different species of aquatic and land turtles or tortoises are displayed on the reptile mesa. **Australian Snake-necked Turtles, Chinese Chunk-headed Turtles, Alligator Snappers, Box Turtles, Madagascan Radiated Tortoises** and **Star Tortoises** from India and Ceylon are among the many different kinds shown. Most of the land turtles or tortoises are vegetarian. A few, such as the **Box Turtles,** eat both meat and vegetation. The aquatic turtles are fed only ground horse meat, and this once per week.

The giant land tortoises, because of their outstanding size, probably arouse more visitor interest than any other specimens in the reptile collection. The **Giant Tortoises** are found only in two areas of the world, both are island groups. One area of occurrence is the Aldabra group in the Indian

Ocean from which comes the so-called **Elephant Tortoise**. The other type of giant tortoise comes from the Galapagos Islands which lie about 600 miles off the coast of Ecuador in South America. Formerly extremely abundant due to the absence of enemies in their island retreats, the **Giant Tortoises** were soon reduced in numbers by man after their edible qualities had been discovered. The first serious inroads upon the tortoise population of the islands were made by the 18th and 19th century whalers, buccaneers and men-o'-war. The sailing ship mariners of those early days were not long in discovering in the tortoises a valuable source of fresh meat. Literally tens of thousands of these helpless and harmless animals were removed from their island homes and taken to sea stored in the holds of sailing ships. The **Giant Tortoises** were known to be capable of subsisting for as long as 14 months in the hold of a ship without either food or water. Their tenacity of life as well as their succulence rendered them of great value to seafarers in the days long preceding the development of refrigeration.

The **Giant Tortoises** are strictly vegetarian. Here at the zoo they are daily offered several crates of lettuce as well as a crate of carrots. Once a week they receive several crates of spineless cactus, a delicacy much to their liking.

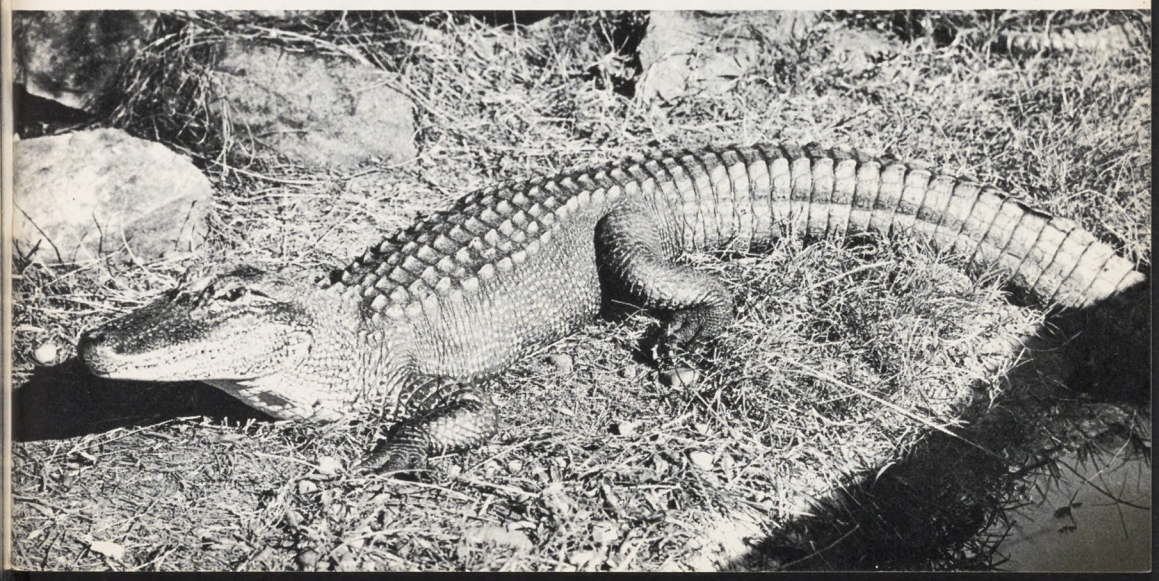
The largest of our **Giant Tortoises** is a specimen from the Galapagos Islands. It is about four feet in length and, at the last weighing, tipped the scales at a dainty 526 pounds. Because of his great size and also because of his very worn and pitted shell we estimate his age to be at least one hundred years. But there is no way to accurately determine the age of any of these tortoises. They are probably the longest lived animals in the world. A specimen of the **Elephant Tortoise** is known to have lived in captivity for 152 years before it was accidentally killed.

Each evening during the cooler months of the year and when inclement weather is likely, the **Giant Tortoises** are put "to bed" in their electrically heated barn. Because they come from a warm, equatorial climate they must be protected from the rain and cold of our area. The tortoises are all well accustomed to going to bed at night, having done so for a great many years. It is no problem to get them into the barn under their own power. In spite of their slow, plodding gait, the "tortoise drive" usually takes only about 15 minutes.

Crocodilians

The enclosures containing large specimens of these lizard-like reptiles are located at the extreme west end of the reptile mesa. Each enclosure has a large tank of water and plenty of room for the animals to lie in the sun on the grassy bank.

AMERICAN ALLIGATOR: A large and well known native of the southeastern United States.



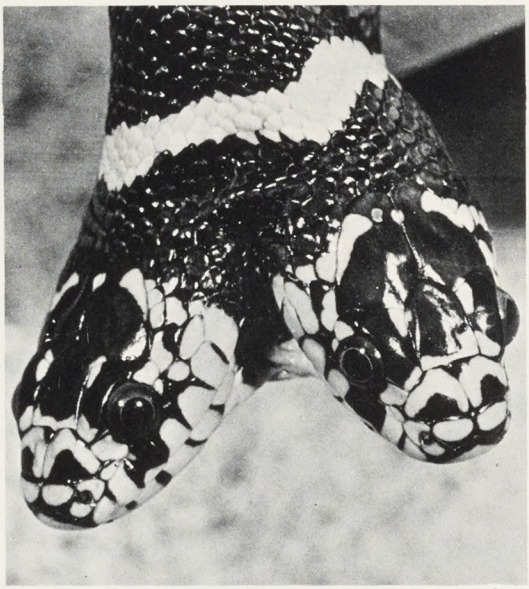
Basking on the bank is done during the warmer part of the day when air temperatures are high; when air temperatures are too low for the creatures' liking, they will retire to the pool.

We seldom display any crocodilians except the **American Alligator.** The reason for this is that our Southern California climate is not well suited to the keeping of crocodiles outside during the winter months. Alligators are more tolerant of our winter time temperatures and do quite well outside.

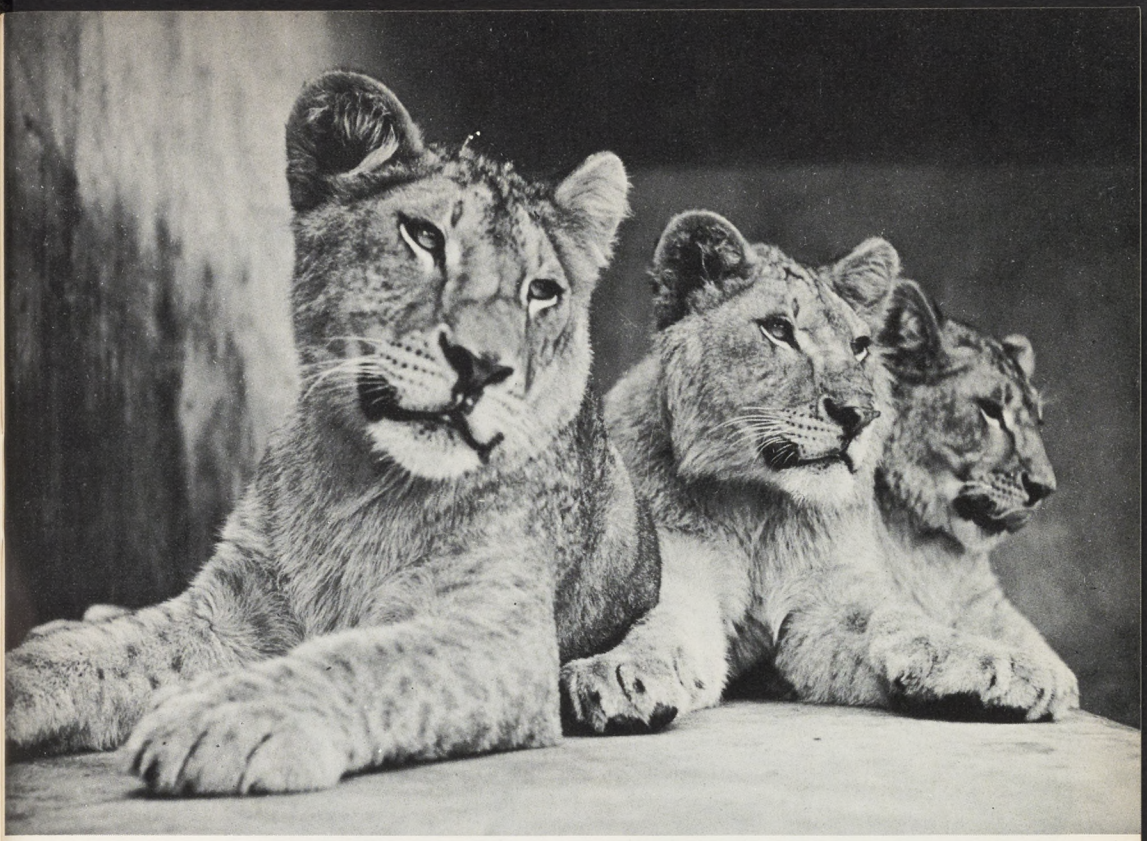
In a pit just behind the Reptile House are displayed small alligators. These generally range in size from youngsters a foot or so in length to older individuals three or four feet long. When these young alligators become too large for this pool, they are moved to the larger ponds at the west end of the reptile mesa. Most of the specimens to be seen in the large alligator enclosures have been raised from babies right here at the zoo.

Depending on their size, our alligators are fed ground horse meat, lungs or chunks of horse meat. The youngest specimens get the ground meat and the largest the lungs. They are fed once per week except during the period from about the end of October to the end of April. During this period the outside temperatures are not high enough to give the alligators an appetite and they fast all winter long.

People often ask what is the difference between an alligator and a crocodile and usually add, "Which one is it whose upper jaw opens instead of the lower one?" The answer is somewhat involved. Scientifically there are but two alligators; that is, two crocodilians belonging to the genus ***Alligator.*** One is the alligator of the southern United States and the other is found in China. All other similar animals are also crocodilians but do not belong to the genus ***Alligator.*** All crocodilians are similar in structure and all open their jaws in the same way. Just as in human beings it is the lower, not the upper, jaw that opens. In the United States the alligator is found throughout the Southeastern States and has a short, blunt nose. The **American Crocodile** is found only on the tip of Florida and has a longer pointed nose.



Our two-headed KING SNAKE was appropriately named "Dudley Duplex."



A "family portrait" of our MASAI LIONS.

MAMMALS

When a zoo visitor asks, "Which way to the animals?" he almost invariably means, "Which way to the mammals?" Contrary to common usage, "animal" refers to any non-vegetable being from a microscopic, single-celled creature to man. Mammals are a restricted group of animals that possess hair at some stage of their development and nourish their young by means of milk glands. With only two exceptions, the Echidna and Duckbill Platypus of Australasia, all mammals produce their young through a birth process rather than by means of an incubated egg. Because of adaptations to many different ways of life, all sorts of diverse creatures are found within the group: whales and porpoises, seals, hoofed mammals, carnivores, flying mammals, and even man. Like birds, mammals originated from reptiles some 160 million years ago. Eighteen major groups, known as "orders," are generally recognized today, and the geologic strata are littered with remains of many others that for one reason or another failed to pass Nature's rigid tests for survival.



VIRGINIA OPOSSUMS are living fossils of North America.

Pouched Mammals

The marsupials (pouched mammals) form a primitive order of mammals, most members of which occur today in Australia and adjacent islands. Included in this group are many unique forms: the koalas, wombats, kangaroos, wallaroos, wallabies, our own native opossum, and many others.

Marsupials exhibit many peculiarities, most interesting, perhaps, are those concerned with reproduction and birth. The young are born in an undeveloped state after a very short growth period in the body of the mother. In the case of the **Virginia Opossum** this growth period is only 13 days, and the newborn young are smaller than honey bees. In the case of most species the babies, immediately after birth, crawl into a fur-lined pouch present on the abdomen of the mother, where they undergo several months additional development. Even in the few species where

the pouch is vestigal or lacking there are always present two slender pouch supporting rods known as "epipubic" bones. These bones are not found in higher mammal groups.

Comparatively low in intelligence, it is believed that marsupials became extinct in most parts of the world because of their inability to compete with brainier, more progressive mammals. Their abundance in Australia may be attributed to their early arrival there when that continent was still part of the Asiatic mainland. Subsequent submergence and isolation prevented invasion by more advanced mammals, hence these early marsupials were able to spread out into various environmental situations and evolve into types that closely parallel mammals of other groups found throughout the world. Thus we have mouse-like, mole-like, wolf-like, cat-like, and other forms.

The zoo's marsupial collection contains many rare and interesting forms. The **Tasmanian Devil** is a small, somewhat ungainly appearing flesh-eater confined to the island of Tasmania. Though not active by nature, it more than makes up for this deficiency by strength and cunning. It is noted for its extremely powerful jaws. Natural prey consists of wallabies, ground birds, and lizards. The **Brush-tailed Possum** has a widespread distribution in Australia and also occurs on adjacent islands. It is cat-like in appearance and though

TASMANIAN DEVILS occur only on the island of Tasmania.





The KOALA dines exclusively on products of the Eucalyptus tree.

well adapted to an arboreal (tree living) existence by virtue of a prehensile (grasping) tail, it is by no means confined to wooded areas. On treeless deserts it may be found living in rabbit warrens. The pelt of the possum was much utilized in the fur industry.

Perhaps the most popular of all pouched animals is the **Koala**, the living prototype of the teddy bear. This appealing little "Aussie" feeds only on the leaves of the Eucalyptus tree, many species of which are grown in the zoo grounds. Koalas spend most of their lives in trees, rarely descending to the ground. In this respect and in their slow, deliberate movements

they resemble the sloths of the American tropics. The zoo's Koalas were presented as a permanent gift and goodwill gesture from the people of Australia to their friends in America. The Taronga Park Zoo in Sidney and Sir Edward Hallstrom, president of their Zoological Society, were instrumental in arranging this magnificent gift. These are the only living Koalas outside of Australia.

The marsupial counterpart of the woodchuck is the wombat, several types of which are found in southeastern Australia, Tasmania, and adjacent islands. The **Southern Hairy-nosed Wombat** is confined to the southern half of South Australia. It is distinguished by its hairy muzzle, soft fur and longer, more pointed ears. Wombats are burrowing animals. They subsist entirely on vegetation: grasses, roots and bulbs. In appearance they somewhat resemble small bears.

The typical kangaroos and their allies are characterized by long, powerful hind limbs well adapted to hopping, and a stout tail that is used as a prop while the animal is sitting. Almost all members of this group are plant eaters and occupy the position among marsupials that is filled by deer and antelope of other countries.



HAIRY-NOSED WOMBAT: A South Australian burrowing marsupial.

The **Tasmanian Gray Kangaroo** reaches a length of almost 10 feet and may weigh over 200 pounds. Jumps of over 10 feet in height and 27 feet horizontal dis-

A GRAY KANGAROO with young in pouch.



tance have been recorded for this species. In addition to the Tasmanian form, which prefers thick brush, other races of the gray kangaroo are found in open forest country in Australia and on Kangaroo Island. The **Red Kangaroo** is another large species occurring in the inner, dry plains region of Australia. It is more gracefully formed than the gray species. A "blue" phase occurs commonly among red kangaroos. These animals are sometimes mistaken for the true gray kangaroos but may be distinguished from the latter by a well marked black whisker mark on each side of the nostrils. The **Wallaroo** is a medium size kangaroo with short stocky limbs. It is sometimes called "Rock Kangaroo" because of its preference for rugged rocky terrain. This species is confined to Australia.

Wallabies are small members of the kangaroo family. Many species occur in Australia, Tasmania and adjacent islands. The **Agile Wallaby** has an extensive range along swamp thickets and streams of northern Australia. One race occurs in southern New Guinea. **Bennett's Wallaby** is a dark, thick-furred form found on Tasmania.

Insect Eaters

The insectivores or insect eaters form a diverse group of mammals having a widespread distribution throughout most of the world except the Australian region. Members of this order are usually small, have elongated, pointed muzzles and very small eyes. Five toes are usually present on both fore and hind feet and the entire sole of the foot contacts the ground in walking. It is believed that all higher groups of mammals evolved from ancient members of this interesting order. Shrews and common garden moles are familiar examples of insectivores found in the United States.

The **European Hedgehog** is a rat-sized member of the group native to the British Isles and Western Europe. Although covered with spines it must not be confused with the larger porcupine which is a member of the rodent order. When alarmed the hedgehog rolls itself into a tight ball causing the spines to project in all directions. Most carnivores leave this little ball of needles strictly alone and hunt easier-to-eat prey. Hedgehogs feed on worms, slugs, lizards and the like. Many species are found in Africa, Europe and Asia.

A baby SLOW LORIS gets his first look at the photographer.



Primates

To scientist and layman alike the primate order holds special appeal since, in addition to including the familiar monkeys and apes, it is the category that contains man, himself.

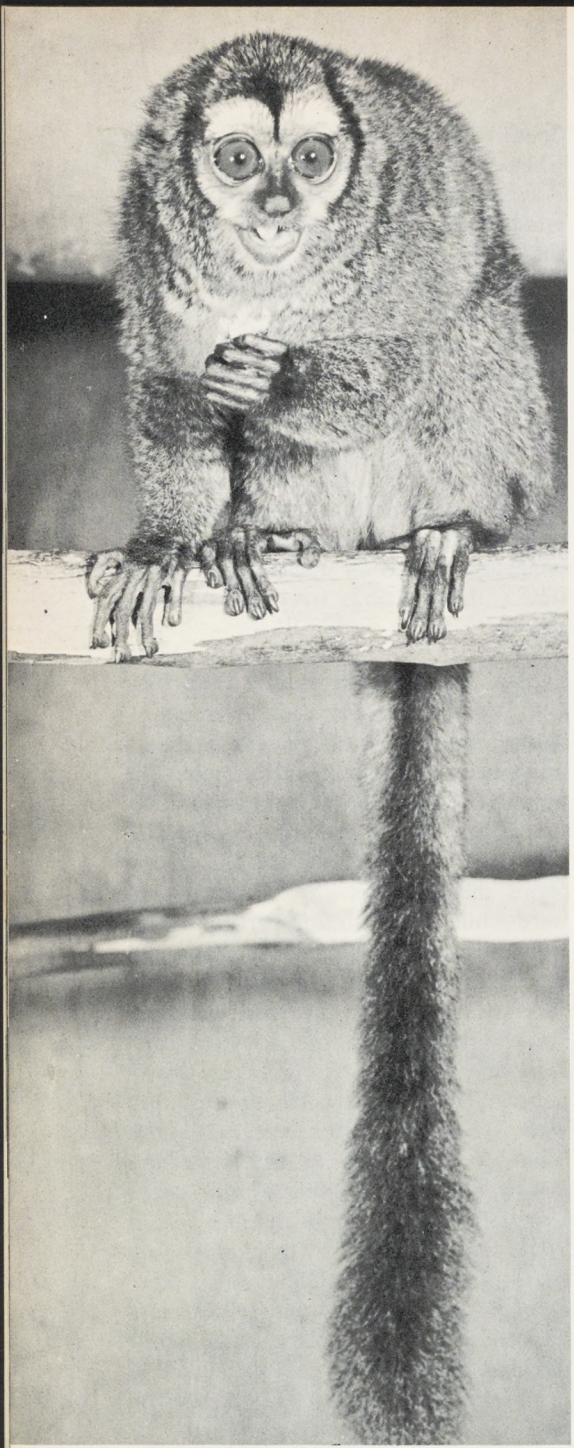
Essentially arboreal in habit, most members of this order live in the tropical forests of both the old and new worlds. They are characterized by having a brain that may attain great size and a high level of development, grasping hands and feet that are equipped with flattened nails instead of claws on at least some of the digits, and a collarbone. A menstrual cycle commonly occurs in this group.

The zoo's collection, usually numbering at least sixty forms, has long been recognized as one of the outstanding primate exhibits in the world. Many species extremely difficult to maintain in captivity have lived here for many years and have produced young as well. Among the primitive members of this order are the lorises of southeastern Asia and the lemurs of Madagascar. The **Slow Loris** is a thickly furred, stocky little animal weighing about a pound. Its large eyes are indicative of its nocturnal habits. Slow and deliberate in movement, the loris seldom if ever leaves the protection of its beloved trees. The day is spent asleep; at night it fares forth in search of favorite fruits, insects, and occasional bird eggs. Geckos (a kind of lizard) are especially relished when the loris is lucky enough to catch them.

Lemurs differ from lorises in many details; most noticeably perhaps, is the proportionately greater length of the hind legs compared with the forelimbs. All limbs of the loris are about the same length. The facial region of the lemur is also noticeably longer, hence a more pronounced muzzle is evident. These animals are confined to Madagascar and the adjacent Comoro Islands. The **Mongoose Lemur** is a small cat-sized animal occurring in forested areas in small groups of not more than three or four individuals. In contrast to most of its relatives which are abroad only at night, this species is strictly diurnal. Its food consists mainly of figs and plantains.

The more advanced primates, monkeys, apes and man, have a much larger and more complicated brain than the foregoing forms. Although, when walking, most of them go on all fours there is a great tendency towards an upright sitting posture with the hands free to manipulate objects.

New World monkeys differ from their Old World contemporaries in many respects. Perhaps the easiest way to distinguish between them is by the nose. The nostrils of New World monkeys are directed outward and the openings are separated by a very wide partition. In Old World forms the openings are directed downward while the separating partition is usually quite narrow. None of the American species are equipped with cheek pouches for food storage or have bare calloused areas on the buttocks. These characteristics are common in old world forms. Many, but not all, American species are equipped with a grasping tail that is used as a fifth hand. None of the Old World forms have this type of tail. All Old World species have 32 teeth, the same number that is found in man. American monkeys are included in two families. The familiar capuchins, howlers, squirrel and spider monkeys, sakis and others belong to the family Cebidae. These monkeys have a total of 36 teeth and have nails instead of claws on all fingers and toes. It is only here that the prehensile (grasping) type of tail occurs and, even within the family, some species do not have this type of organ.



The NIGHT MONKEY'S large eyes reflect its nocturnal habits.

The **Night Monkey** is a good example of a non-prehensile tailed type. This little primate ranges locally throughout the forests of Central and South America from Nicaragua to northeastern Argentina. It is the most nocturnal in habit of all American monkeys and for this reason is sometimes called the "night monkey." The extremely large eyes are adaptations to night vision. The owl or night monkey has a head and body length of about 12 inches. The tail length is from 12 to 16 inches. Another example of a non-prehensile tailed monkey is the saki, several species of which occur in the dense rain forests of South America. Sakis are rather shaggy little animals with long brushy tails. They are not common and, as a rule, do poorly in captivity. A **Black Saki** from British Guiana established a longevity record by living in the zoo for 15 years. The **Golden-headed Saki** from the headwaters of the Amazon has bred and reared young here. One of the most captivating members of the family is the **Squirrel Monkey**. Inquisitive and gentle, these little animals gather in large groups to frolic and play through the forests of Central and South America. Where they occur they are usually the most numerous of any species of monkey in the area.

Several species of capuchins are always to be seen in the collection. These are the familiar "organ-grinder" monkeys. Ranging widely from Mexico to Southern Brazil. Their habit of carrying their prehensile tails rolled in a loose ring when not in use have earned them the name "ringtail." A **Hooded Capuchin** has lived in the zoo for over 28 years and holds the longevity record for all species of capuchins. Its age at the time of arrival is unknown. Hooded capuchins range through the Guianas of northern South America.

The most fantastic and clownish of the American primates are the long-armed spider monkeys whose generic name, **Ateles,** meaning imperfect, refers to the fact that they lack thumbs. Their strong

prehensile tails are equipped with a hairless "non-skid" area on the under side that aids in grasping limbs as they race through the trees. There are many varieties of spider monkeys ranging from southern Mexico south to northern Matto Grosso, Brazil. They are considered very good to eat by the natives of many countries they inhabit. Many forms are exhibited here, the **Black** from northern South America and the **Central American** are examples. **Humboldt's Woolly Monkey** from the upper Amazon, Colombia and Peru, resembles the spider monkeys but is of stocky build, has thumbs, and possesses a dense, plushy coat.

The family Callithricidae includes the marmosets and tamarins. Members of this family have nails on the great toes only. The rest of the digits are provided with sharp claws. The number of teeth have been reduced to 32. In most cases twins are produced at birth and in some species the father assists in the care of the young by carrying them about except during the time they are engaged in nursing. All varieties are small. The tiniest, the **Pigmy Marmoset** from Brazil, Peru, and Ecuador, weighs less than five ounces when fully grown. **Geoffroy's Tamarin** inhabits Central America from Costa Rica to Panama. Several species of marmosets and tamarins have reared young in the zoo.

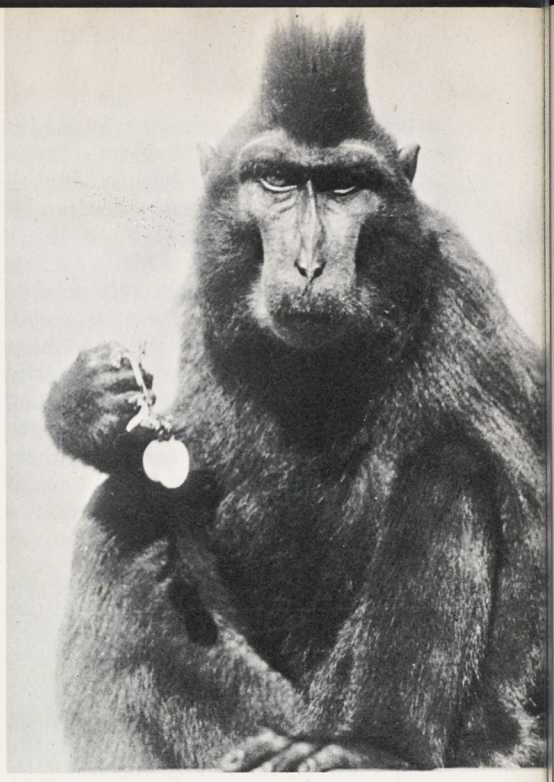
The vast array of Old World monkeys are included in two families, the Cercopithecidae and the Colobidae. Both groups have African and Asiatic representatives. Their distinction is not always easy. Members of the first family possess cheek pouches, have arms and legs nearly equal in length, and simple stomachs. The tails are variable in length and one form does not have this organ. Included here are the macaques, mangabeys, baboons, guenons and many others. Members of the family Colobidae are characterized by their lanky build, long tails, longer legs than arms, and absence of cheek pouches. The stomach is divided into a number of pouches or sacs instead of being a simple bladder-like organ as is the case in all other primates. Included in this family are the langurs and **Proboscis Monkeys** of Asia and the African colobus or "thumbless" monkeys.

The San Diego Zoo's PROBOSCIS MONKEYS, first to be exhibited in the Western Hemisphere.





BARBARY "APES" are the only African species of Macaque.



CELEBES CRESTED "APE": A rare primate from Celebes.

Many species of macaques are on display at the zoo. In general these monkeys are characterized by having stout compact bodies, relatively short limbs, and close-set eyes surmounted by heavy brow ridges. The tail length varies according to the species. The elongated snout is responsible for the name "macaque" which in French means "dog-faced monkey." With the exception of the **Barbary Macaque** or **Magot,** which occurs in North Africa and Gibraltar, all macaques are Asiatic in distribution. This macaque is unique also in being the only tailless monkey. The **Lion-tailed Macaque** is a large black monkey with a gray ruff and a tassled tail. This species inhabits the high forests of southwestern India, and is usually found in troops of from 12 to 20 or more individuals. The rare jet-black **Crested "Ape"** seems, in many respects to be intermediate between the macaques and baboons; however, the nostrils open at some distance behind the end of the snout instead of at the tip as they do in the true baboons.

The mangabeys are slender long-tailed monkeys confined to equatorial Africa. They are smaller than the macaques and have rather silky coats and startling white eyelids. The **Golden-bellied Mangabey** is an extremely rare form from the Congo Basin. The **White-collared** or **"Cherry-head"** is one of the most handsomely marked members of the group. Most mangabeys are almost exclusively arboreal, seldom if ever descending to the ground.

The guenons constitute the largest group of primates; over 80 species and races have been described. In this group are found some of the most brilliantly colored and striking members of the primate order. The common color of the fur is dark olive green finely grizzled with yellow. This color deepens on the outer sur-

faces of the limbs and tail until it is almost black. A beard is present in many species. They are usually seen in small family groups high in the top-most branches of the trees. Among the foods they eat are fruits, shoots, insects and eggs. Guenons occur throughout Africa south of the Sahara. They resemble the mangabeys, somewhat, but differ in molar tooth structure. The **Debrazza Guenon** of the densest equatorial forests is a striking species with an orange crescent on the forehead, white upper lip and chin whiskers, and a brindled gray coat. This species has borne young in the zoo. The **Diana** of Sierra Leone and Liberia has a trim crescent of white across its brow, a solemn black face, and a shapely black beard with a white edge. It also has a reddish band across the thigh.

The swamps of the central Belgian Congo are inhabited by a rare and little known monkey that has no really acceptable common name. It has been called **Allen's Baboon-like Monkey**, which is extremely misleading for it is a small creature, very guenon-like in appearance. In addition to more customary monkey fare, it feeds on snails, shrimps, and small fish. This monkey is very fond of water.

The baboon clan is chiefly African and includes the largest of all monkeys. Typical baboons may be distinquished from other monkeys by their size and also by their dog-like snouts which are far more pronounced than those of the macaques. These fearless creatures are usually quite dangerous upon reaching maturity. They are extremely erratic and will fly into fits of rage over the simplest of incidents. Baboons roam in large packs and will feed on anything that is edible. Unlike most primates, they are chiefly ground dwellers and prefer rocky terrain. The **Chacma** is a solidly

ALLEN'S MONKEY, a rare inhabitant of the Congo swamps.





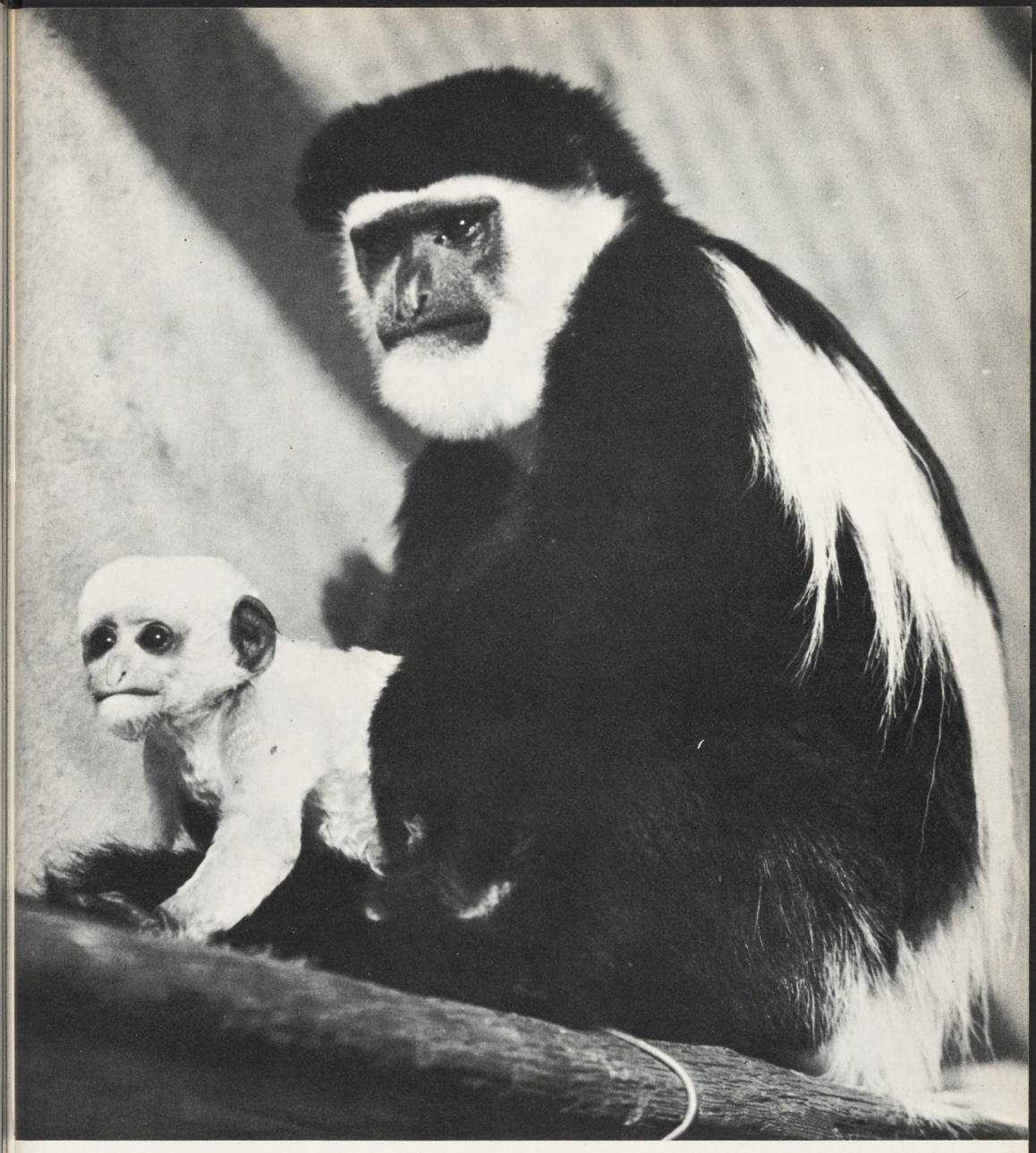
The DRILL is a savage, dangerous animal.

built baboon from South Africa. The general color of the shaggy coat is grayish-black. The name "Chacma" is derived from its Hottentot designation "T'chackamma." The **Long-armed Baboon** is distinguished by the pale brownish-yellow hue of the fur. This species has a rather extensive range in east Africa. The **Anubis, Doguera** or **Dog-faced Baboon** is an olive green coated animal found in East Africa, the Sudan, and the Congo. The **Gelada** is a rarely exhibited baboon-like monkey inhabiting the mountains of Abyssinia, usually above 6,000 feet. It has a heavy dark mane and a naked red area on the chest. The Gelada has nostrils that are situated farther back on the muzzle instead of at the tip as in the true baboons. The **Hamadryas** or **Sacred Baboon** is a pale gray species that inhabits North Africa and Arabia. The large mane covering the face and shoulders and the flesh colored face and ears are characteristic. This baboon was considered sacred by the ancient Egyptians and was consecrated to their god Thoth. Hermopolis, the city of Thoth, was especially devoted to the cult of these animals. The nearly tailless **Mandrill** from West Africa is characterized by its hugh size and highly colored muzzle. This organ has highly prominent rib-like swellings brilliantly colored with blues, purples, and red. The **Drill** somewhat resembles the Mandrill but has a black muzzle. This baboon is found in north Cameroon.

The leaf-eating monkeys have slender bodies, long limbs and, in most cases, long tails. Although their diet consists chiefly of leaves, they also feed on fruits and blossoms. Most of these monkeys are delicate and not often exhibited. The **Kikuyu Colobus** inhabits the mountains of Kenya, East Africa. This long-coated species is black with a white fringe about the face, long white mantle and a white tasseled tail. It has bred and reared young here. The newborn are white.

Of the Asiatic langurs, the best known species is the **Entellus Langur** of India. This large gray monkey is considered sacred and is often seen in a semi-domesticated state around temples. The **Spectacled Langur** of Siam is smoke colored and has white rings of naked skin around the eyes. Both of these langurs have produced young at the Zoo. The newborn of these monkeys are golden colored at birth.

The apes include the gibbons, orangutans, chimpanzees, and gorillas. The latter three groups are customarily known as anthropoid or manlike apes. None of the members of this family have external tails. In all cases the arms are longer than the legs, and the chest is more-or-less flattened from back to front. The apes are the most



A peculiarity of COLOBUS MONKEY babies is their white coloration.

man-like in appearance of any of the primates. All have a total of 32 teeth, the same as man and the Old World monkeys. Gibbons and orang-utans are confined to southeastern Asia and the East Indies while chimpanzees and gorillas are found only in equatorial Africa.

Gibbons are the smallest of the apes, the least intelligent, and perhaps, the greatest acrobats of all living animals. The scientific name **Hylobates** means tree-walker, which is appropriate since they spend most

of their time high in the trees. When they do descend to the ground or walk along large limbs, they have the most erect carriage of any of the apes, walking fully erect with their arms extended high above their heads. Gibbons have extremely long arms that easily reach the ground when they stand erect. In contrast to the anthropoid apes they have small bare rump patches known as "callosities."

These primates are found in tropical Asia, Indo- and Cochin China to the tip of Malaya, as well as on some of the Indonesian Islands. They also range west into India. In their native haunts they occur in small family groups, each group ranging over a territory of many acres. They use regular trails among the trees and will fiercely defend their territory from encroachment by neighboring groups. The classification of gibbons is confusing since color phases occur which in the past were given separate names. Subsequent studies proved, however, that black, gold, cream and other colored individuals were merely individual varients which could occur within the same group. Six species are currently recognized. Representatives of all have been exhibited here. The **White-handed Gibbon** is usually black or blackish-brown. The hands are whitish-buff, and a white ring surrounds the face. Pale specimens often occur. The **Siamang** occuring in Tenasserim, Malaya, and Sumatra, is a large black gibbon distinguished by the fact that the second and third toes are enclosed in a common web of skin. It is further distinguished by the presence of an inflatable throat sac which serves as a vocal resonating chamber.

The range of the **Orang-utan** is entirely confined to the islands of Borneo and Sumatra. In common with the other two groups of man-like apes the orangs possess a high degree of intelligence and are believed by some authorities to more nearly approach man in this respect than either the chimpanzee or the gorilla.

In zoos these apes prove to be quite clever with tools and seem to be natural engineers. They are systematically destructive to their cages, hence great care must be used in the construction of every feature. Patience seems to be their greatest attribute, and it is in this characteristic that they contrast most strongly with the temperamental chimpanzees. The name orang-utan means "man-of-the-woods" in native tongue and well describes this forest dwelling primate. The long coarse body hair is reddish brown in color, ranging from sorrel to deep auburn. Adult males develop high cheek pads that extend out from the face giving a curious Buddha-like appearance to the animal. The average weight of wild males is about 165 pounds, but a giant specimen that lived many years at the San Diego Zoo reached the amazing weight of 335 pounds. Females average much smaller. The average height of the male is 4½ feet.

Like gibbons, orangs spend most of the time above the ground but, whereas the gibbon races through the trees performing all sorts of aerial gymnastics, the orang proceeds with caution, testing each limb before trusting it to hold its weight. At night substantial nests are constructed high in the trees. On the ground the gait is a shambling, whirling sort of walk in which the long arms are used as crutches. The extremely short legs of the orang contrast noticeably with the long arms.

The **Chimpanzee** of equatorial Africa has been used extensively in behavior studies and is the best known of the great apes. More man-like in appearance than the orang, the chimp may stand five feet high and weigh up to 175 pounds. The coat is composed of long coarse hairs predominantly black in color. Chimps are highly intelligent and appealing when young. As adults they almost invariably become erratic and dangerous. In the wild they are much more at home on the ground than in the trees, although they



A SUMATRAN ORANG-UTAN baby
pauses in her play through the trees.

can and do climb readily. They usually associate in groups of from four to fourteen individuals of both sexes and all ages and, unlike gibbons, do not stay within limits of definite territories, but tend instead to wander at random over a rather large area. At night they sleep in tree nests constructed at varying heights above the ground.

In the Zoo chimps breed and produce young readily. Three generations are exhibited here in one enclosure.

Gorillas are unquestionably the most impressive of all primates as well as being among the most valuable of all specimens. They are worth at least five thousand dollars when purchased as babies, and their value skyrockets as they begin to mature. Two categories are usually recognized: the **Lowland Gorilla** of Gaboon, Cameroons, French Equatorial Africa, and eastern Nigeria, and the **Mountain Gorilla** of eastern Belgian Congo and western Uganda. The mountain form is somewhat the larger of the two and is characterized by a conspicuous crest on the head. Two male **Mountain Gorillas** in the Zoo attained weights of over **six hundred pounds** each. These are the two largest gorillas ever recorded. Mbongo, the younger, died after ten-and-one-half years in the Zoo and weighed 618 pounds. Ngagi, somewhat older, reached a weight of 635 pounds. They were captured by the Martin Johnsons in 1930 and were estimated to be between four and five years old at this time.

In 1949 three infant **Lowland Gorillas** were obtained from the French Cameroons with special permission of the French Government. They were all under a year old at the time and weighed between six and eight pounds each. Since their infancy, they have been under continuous observation by a trained psychologist who is studying their intelligence and learning capacity.

Gorillas, like chimps, usually walk on all fours when on the ground. Due to their tremendous size when adult, they spend most of their time at or near ground level. The young, however, are excellent climbers. When on all fours they bear their weight on the second joints of their fingers and the soles of their feet. The feet are much less flexible than those of the chimp, and both hands and feet are more in proportion to those of man. When gorillas do stand erect they stand very straight, carrying their arms at their sides and stepping on the flat of the foot.

As in the case of most primates, the bulk of the gorilla diet is of vegetable origin, including leaves, fruits, shoots, seeds and nuts; though they probably are not averse to an occasional bird or egg.

The aspect of gorilla behavior that most intrigues visitors is that of chest-beating. Although popular literature usually attributes this gesture to anger or alarm, it is actually an expression of exuberance. Only when gorillas are in the best of spirits do they beat their chests. This is usually done with cupped hands which adds resonance to the drumming. The sound may serve as a signal by which members of a gorilla pack retain contact with one another in the deep jungle. Vocally, gorillas are rather quiet creatures although they do have a wide variety of vocalizations should they feel inclined to use them. In voice, and temperament as well, they are much less erratic and hysterical than their African relatives, the chimpanzees. Their quiet reserve and innate dignity places them on a level far above the other so-called "lower" primates.



These **LOWLAND GORILLA** youngsters have celebrated several birthdays at the Zoo, complete with cake and presents.



An elongate muzzle and formidable claws characterize the GIANT ANTEATER.

Anteaters, Sloths and Armadillos

These animals belong to a small order of mammals which is confined to the western hemisphere. Members of this group exhibit many pecularities. Some, the anteaters, are toothless, while none have incisor or canine teeth. Cheek teeth, when present, are unique in that they lack enamel. Only one species, the **Texas Armadillo,** occurs as far north as the southern border of the United States. Most are confined to Central and South America. The **Great Anteater** is a large, coarse-haired animal with a total length of between six and seven feet, about half of which is accounted for by the huge tail. The **Great Anteater** has a long tubular muzzle equipped with a small terminal opening through which the greatly enlongated sticky tongue can be protruded to capture ants and termites which form its principle diet. Its powerful forelegs and long curved claws are used to tear open the nests of these insects. Strictly terrestrial in habit, this anteater frequents low swampy regions. Its small cousins, the **Lesser Anteater** and the **Two-toed Anteater** are arboreal and equipped with prehensile tails.

"Haste makes waste" seems to be the basic philosophy of THREE-TOED SLOTHS.

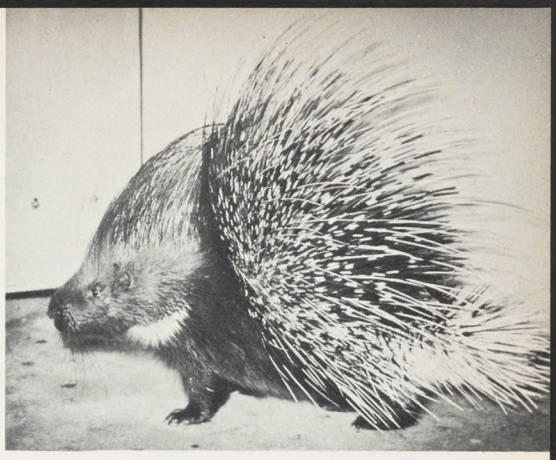


Rodents

Thirty-two families of rodents are currently recognized in this large order, which far exceeds the number of species and individuals of all other orders of mammals combined. They range in size from small mice weighing less than an ounce to the giant Cabybara that tips the scales at close to 100 pounds. In adaptations to various environmental situations the rodents present a bewildering variety of patterns. Some, the flying squirrels, have skin membranes that enable them to glide from tree to tree. The kangaroo rats of southwestern United States have elongated hind legs by means of which they are able to take tremendous leaps over the open terrain of their desert habitat to escape their enemies. Some (the beaver and muskrat) are specialized for a semi-aquatic existence; while others, such as the pocket gopher, have become modified for an underground life.

It often has been said that a rodent is a rodent because it gnaws. All rodents possess two long upper and lower "gnawing" incisor teeth that grow continuously throughout the life of the animal. These teeth are peculiar in that the enamel is present only on the front surface. Thus as the teeth are worn down by use, a sharp chisel-like surface is always maintained, since the softer dentine of the back surface wears away faster. No canine teeth are present. This leaves a wide open space between the incisors and cheek teeth. In no case does the total number of teeth exceed twenty-two.

Perhaps the most appealing of all rodents are the squirrels, several types of which are exhibited at the Zoo. The **Texas Fox Squirrel** is an introduced form that roams free on the grounds. Open oak groves are the choice of fox squirrels in the prairie states while open long-leaf pine woods and cypress swamp borders are favorite haunts in the south. This species does not like the deep, close forests that are preferred by its relative, the gray squirrel. Loosely built leaf nests are utilized as summer retreats but winter homes are usually made in tree hollows. The **Giant Tree Squirrel** and several species of tropical American tree squirrels are also exhibited here.



AFRICAN CRESTED PORCUPINE: Handle with Care!

The porcupine is the second largest rodent found in North America, sometimes attaining a weight of forty pounds and being exceeded only by the beaver which may weigh as much as sixty pounds. Because of its sharp spines or quills which are merely modified hairs, the porcupine is one of the best protected mammals in our forests. Dogs, pumas, and even wolverines have been known to attack these slow moving clumsy rodents; but it is doubtful if these predators ever attempt this rather foolhardy task a second time unless driven by extreme hunger. These animals may become pests in timber country, since a large portion of the diet is made up of the bark of pine, juniper, white firs and other trees. The story about the porcupine's ability to throw its quills is not founded in fact. After rough handling some of the quills may become loosened and tossed about as the animal struggles and thrashes with its tail. This could be the source of the above tale. The **American Yellow-haired Porcupine** and the enormous black and white **Crested Porcupine** of Africa are exhibited here. The Old World porcupines, despite superficial resemblances to New World forms, are placed in a separate family.

The Latin-American countries are inhabited by a number of distinctive rodents. Perhaps the most striking is the gigantic semi-aquatic **Capybara** which may reach a length of four feet and a weight of up to 100 pounds. The **Capybara** inhabits the shores of lakes and rivers in Central and eastern South America as far south as the Rio de la Plata and is also found in the lowlands of Peru and Bolivia. This rodent dives and swims with great ease and takes to the water at the first sign of danger. The commercial **Chinchilla** is native to the high Andes Mountains. These little rodents are found associating in large groups. They build extensive burrows in the barren hillsides and live on the scant vegetation, such as grasses, roots and moss found in these areas.

Flesh-eaters

This vast and diversified order includes the dogs, wolves, foxes, cats, weasels, badgers and many other mammals that are adapted to catching and killing prey and eating meat. Some, the bears and raccoons for example, have deviated from a strictly flesh diet. Others, the hyenas, are usually content to feed on carrion and carcasses left by more aggressive predators. Also included in this order are the seals and walruses that have, to a large degree, forsaken a terrestrial existence in favor of a marine life. Because of these modifications in food habits and other environmental adaptations, it is somewhat difficult to define the group as a whole. Most carnivores have rather small incisor teeth set in a transverse row between two large, sharp canines. As an aid in slicing through tough tendons and gristle, certain cheek teeth have blade-like modifications that permit a scissor-like shearing action while chewing. These teeth are called "carnassials" and are only found in the carnivores. The young are quite helpless for some time after birth.

Fido's wild relatives are many and varied. Best known, perhaps, is the wolf of North America, Europe, and Asia. This animal is still fairly common in Canada

The CAPYBARA: Largest member of the Rodent Order.





A powerful killer on our own continent is the NORTH AMERICAN WOLF.

and Alaska but is almost extinct in the United States. Wolves usually hunt in small family packs of from three to a dozen individuals and may cover an area of from 20 to 60 miles in diameter. Food consists of fish, fruit, birds, rodents, deer and, in the northern part of the range, caribou. Although much maligned in story and song, the wolf leads an exemplary home life. The male brings food to his mate when she is denned up with a litter; the female plays an important role in the education of the cubs. Adult males in good condition usually weigh about 100 pounds, females slightly less. The little coyote is a native of western United States and Mexico. Weighing only about 40 pounds, it is distinguished from the wolf by its small size, narrow nose pad, and habit of running with the tail held down instead of high as does the wolf. This little animal is quite common in San Diego County. The **Dingo** is a wild dog found in Australia, where it is believed to have been introduced by primitive man many thousands of years ago. This dog is the most destructive predator on the continent. Roaming in large packs, it is taking a terrific toll in livestock as well as native wild fauna.

South America is inhabited by a number of rarely exhibited members of the dog family. The **Maned Wolf** is a stilt-legged denizen of the pampas of southern Brazil, Paraguay, and Argentina. Due to its nocturnal habits and retiring nature, this animal is seldom seen in the wild. The **Maned Wolf** never runs in packs. Lizards, snakes, rodents, birds and fruit make up its diet. In appearance this canid somewhat resembles a large, long-legged red fox. The **Bush Dog** is a small, short-legged inhabitant of the deep jungles of northern South Amer-

ica. The first record of captive breeding and birth of this species was at the San Diego Zoo. The **African Hunting Dog** averages about 60 pounds in weight and is characterized by prominent rounded ears, a hyena-like stance, and large body patches of tan, black, and white. These dogs run in packs throughout the greater part of Africa from Sudan to the Cape. In the south African Sabi Game Reserve a pack of over 70 individuals was reported ranging over an area of over 1500 square miles. This predator, more than any other animal except man, has been responsible for the disappearance of the large game herds that were at one time plentiful over much of the continent. The hunting dog differs from other members of the family by having four toes on each front foot.

The bear family contains the largest land carnivores. They are distinguished by their extremely short tails, almost hidden in the body fur, and by the fact that they have a "plantigrade" walk (that is they walk on the entire sole of the foot as does man). Tubers, berries and other fruits are eaten to a much greater extent than is true in the case of other carnivores. Concurrent with this change in diet has occurred a modification of the cheek teeth into a crushing type unlike those of most other members of the order. Bears occur in North and South America, Europe and Asia. One reported from the Atlas Mountains of North Africa now appears to be extinct.

CAPE HUNTING DOGS are a scourge of African game animals.



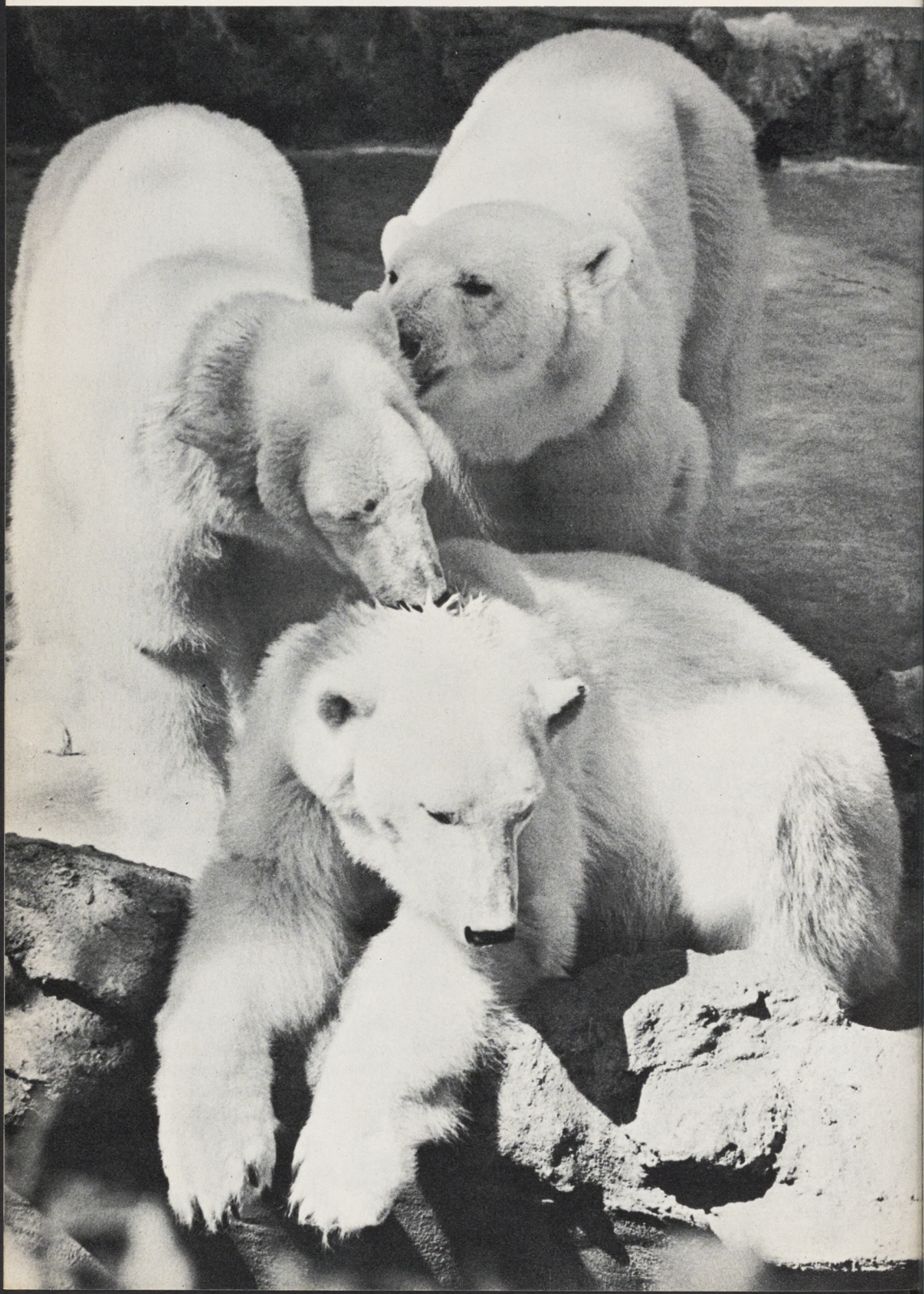


The MONTAGUE ISLAND BROWN BEAR and its relatives are the world's largest carnivores.

The only representative found in South America is the tiny **Spectacled Bear** which stands about 20 inches high at the shoulder and weighs about 150 pounds. This bear lives in the Andes of Peru and Colombia. Its coat is black and the cream colored markings on the face are responsible for its name.

The brown bear group has a wide distribution. Some scientists have recognized as many as 76 species in North America. The best known member is the **Rocky Mountain Grizzly** which averages about 600 pounds in weight. In past years several species of grizzlies occurred in California, one of which is depicted on the state flag. This bear is now extinct in the state; the last record is of one killed in 1922 in Tulare County. One of the largest of all grizzlies, the **Southern California Grizzly** occurred in San Diego County several years ago. The weight of one large male of this species was estimated to be 1400 pounds. The last of these giants was killed near Sunland, Los Angeles County, in 1916. The big brown bears of Alaska are the largest members of the bear family. The **Kodiak Bear** may reach a weight of over 1600 pounds. The **Montague Island Bear** is a closely related form restricted to an island in Prince William Sound. The

POLAR BEARS are dwellers of Arctic ice fields.





The Zoo's SLOTH BEARS never tire of clowning.

Eurasian Brown Bear has a wide range in Europe, Asia, and Japan. This is the type usually tamed for circus acts.

The **Polar Bear** lives in the bleak Arctic regions of both hemispheres. The males of this great white bear average about 900 pounds and have been reported at 1600 pounds. In the wild, polar bears feed chiefly on seal meat and fish. They are excellent swimmers and are sometimes seen far from land.

Asia is inhabited by several black bears. The **Asiatic Black Bear** has a conspicuous ruff on the neck and a prominent V on the chest. It occurs from China to India. The **Sloth Bear** occurs in southern India and Ceylon. The tubular snout has "vacuum-cleaner action" and is used to suck up grubs and termites. The well developed claws are useful in tearing open termite



LESSER PANDAS occupy a limited range in Southeastern Asia.

This WOLVERINE shows his displeasure at being photographed.



STRIPED HYENAS occur in both Africa and Asia.



nests. This bear generally weighs between 200 and 250 pounds. The **Sun Bear** only weighs between 100 and 150 pounds and is the smallest of bears. Despite its size, it is powerful and has a savage disposition. It is native to Siam, Burma, Malaya, and Borneo. Several species of bears have reared young in the Zoo. Among them are the **Sun Bear, Eurasian Brown Bear, Rocky Mountain Grizzly, American Black Bear** and **Polar Bear.**

The raccoon family has representatives in North America, South America and Asia. These mammals resemble the bears in their departure from a strict flesh diet, modifications of cheek teeth structure, and plantigrade walk. They are, however, of much smaller size and have long tails. All members of the group climb well. The raccoons, of which there are several species, occur from Canada south into South America. This familiar mammal is characterized by its bushy ringed-tail and face mark. The **Kinkajou** is a large-eyed, prehensile-tailed animal found in Mexico and Central and South America.

The **Lesser Panda** of the Himalayas is a beautiful little member of the raccoon family that feeds on fruits, eggs, birds, and insects. Its favorite food, however, is bamboo. The name "Panda" is said to be a contraction of two Nepalese words meaning "bamboo eater." Several young pandas have been reared here.

The weasel family embraces a group of small to moderate sized carnivores that, as a rule, have rather short legs, elongate bodies, and feet that are equipped with five well-clawed toes. Musk glands are present in most species. They are especially perfected in the skunks and are used by these animals as a protective weapon. Shearing (carnassial) teeth are specialized and well developed in this family which includes the weasels, minks, skunks, otters, wolverines and others. The **Kenai Wolverine** of Alaska has a formidable reputation and is said to be able to destroy creatures as large as sheep, caribou, and moose. The wolverine, which is the largest member of the family, may reach a weight of 35 or 40 pounds. It is circumpolar in distribution and never ventures far south except along high-flung mountain ranges. In California this species has been recorded as far south as Kern County.

The civets are native to Europe, Asia, and Africa, including Madagascar. One form, the mongoose, has been introduced in the West Indies where it has become well established. The civets are distant relatives of the cats, but are distinguished from them by their long fox-like muzzles, greater number of teeth and unretractable claws. The giant of the family, the **Binturong,** is an inhabitant of the deep forests of tropical Asia and the Indonesian Islands. It is a shaggy animal weighing about 35 pounds. Its heavily-haired tail has a prehensile tip, indicating its arboreal habits. The food of the binturong is varied, consisting of eggs, fruits, birds and other small animals.

The hyenas are confined to Asia and Africa. They are characterized by having extremely powerful jaws, front legs proportionately longer than the back ones, as well as technical structural pecularities of the teeth. Hyenas are reputed to be extremely cowardly despite having the most powerful jaws of any mammal. They have given up the active pursuit of prey to become scavengers and carrion eaters, following the lion and other big carnivores to clean up their leavings. The **Spotted Hyena** is also known as the "laughing hyena" because of its weird calls. This animal is the largest of the hyenas and is confined to Africa south of the Sahara. The smaller **Striped Hyena** inhabits the desert regions of North Africa and southwestern Asia. This mammal is distinguished from its spotted cousin by smaller size, more narrow pointed ears, and the presence of a mane of erectile hair along the back.



Unlike most cats, the TIGER enjoys an occasional bath.

The cat family contains some of the most impressive members of the mammal group. Among the characteristics that distinguish its members are a short rounded skull, padded feet and, in most species, retractable claws. The feet are "digitigrade" rather than plantigrade; that is, the cat walks on its toes rather than on the soles of the feet. Cats occur in the wild state in North and South America, Europe, Asia and Africa.

The Lion of Africa and southwestern Asia may attain a weight of 450 pounds. It can reach a running speed of fifty miles an hour for short distances and, despite its heavy build, has been known to clear seven foot fences. Although called "king of the jungle," the lion is a denizen of veldt and scrub, not forest. It is still quite common in Africa but has become quite rare in the Asiatic parts of its range. Finest of the lions exhibited here is the **Masai Lion** from Kenya, British East Africa.

The tiger has a wide distribution in Asia, ranging from Siberian wastelands to the tropical forests of Malaya, Java and Sumatra. There are reports of 650 pound tigers, but ones weighing between 400 and 500 pounds are more typical. Like most other cats, tigers are nocturnal. They prey on deer, swine and stock animals. Although man-eaters do occur, they are almost invariably aged or maimed animals that can no longer run down more preferable prey. Tigers love water and are seldom found far from lakes or streams. The **Bengal Tiger** of India and the somewhat smaller **Sumatran Tiger** are exhibited here.

The **Leopard** has the widest range of any wild species of cat. It inhabits much of Asia and most of Africa. The black leopard is merely a color phase of the spotted form. Both black and spotted cubs occur in the same litter. Leopards exceeding eight feet in length occur but are rare. A seven foot leopard will average about 115 pounds.

These cats are much more arboreal than the lion or tiger and will cache carcasses high in trees for future meals. They have been reported jumping to rocks 10 feet high carrying a carcass weighing three-fourths as much as themselves.

The **Jaguar** is the largest of all New World cats. It resembles the leopard but is stockier in build and has spots, called rosettes, in the form of irregular rings with dots in the center. The spots of the leopard are more compact. The **Jaguar** may weigh as much as 300 pounds. It occurs from Arizona south throughout the American tropics.

The cats that lack the roaring mechanism in their throat structure are classified in a different scientific group. Largest of these is a species known variously as **Mountain Lion, Puma, Catamount, Panther, Painter,** and **Cougar.** It is found from Canada to southern South America and still occurs in the wild state in California. Many small cats inhabit the Western Hemisphere, but none exceeds the familiar **Ocelot** in beauty. This spotted feline occurs from southwestern United States south into South America. The **Lesser Tiger Cat** is a rare form from the Andes Mountains. The **Canadian Lynx** occurs from northern United States to Alaska.

There are many small forms of cat native to the Old World. The **Jungle Cat** inhabits southern Asia and northeastern Africa. The **Golden Cat** is found in southeastern Asia, while the long-necked, stilt-legged **Serval** lives only in Africa. The **Cheetah, Chita,** or **Hunting Leopard** is found in Africa and India. Unlike other cats this animal does not have fully retractile claws; that is, the claws cannot be sheathed. The cheetah is the fastest of all mammals. In India it has been trained to hunt blackbuck and chinkara antelopes. Today it is so rare in Asia that animals for taming are now imported from Africa.

The JAGUAR is the largest New World cat.



The marine branch of the carnivores is divided into three easily distinguishable groups; the walruses, the sealions or eared-seals, and the true seals. The walruses have long tusks, the sealions have conspicuous external ear-flaps, and the true seals have neither. Walruses are characterized by their large size, thick bodies, coarse bristling whiskers, and well developed tusks. They inhabit the northern seas and ice-floes. Both the **Pacific Walrus** and **Atlantic Walrus** have been exhibited here. An adult male of either species may reach a length of eleven feet and a weight of 3000 pounds. Females are much smaller.

The eared seals are distinguished not only by the presence of the external ear-flaps but also by their ability to use the hind flippers as feet when on land. The **California Sealion**, which inhabits the coasts of southern California and Baja California, is the form usually seen in trained seal acts. This species is still to be seen in large rookeries on off-shore islands and can also be seen playing around the rocks of the mainland. Adult males (bulls) reach a length of six or seven feet. A large male over 20 years old was weighed at the zoo and tipped the scales at 515 pounds. Females (cows) usually average about 150 pounds.

The fur seals belong to the eared-seal group. The **Northern Fur Seal** is the species that breeds on the Pribilof Islands. It is a migratory species. In winter the females roam the Pacific as far south as San Diego. Once nearly extinct, the fur seal is now carefully protected. Its guardian, the U. S. Fish and Wildlife Service, has in the past placed specimens in the zoo for study purposes. One specimen shown here was the first of its kind to be born in captivity. Northern fur seal bulls are blackish above with plushy buff-brown under-fur. Cows and pups tend to be more gray. Fur seals are highly polygamous. A

A cow and pup NORTHERN FUR SEAL.





One of our NORTHERN ELEPHANT SEALS accepts a fishy tidbit.

single bull may accumulate a harem of eighty cows, which he must be able to defend against all contenders. Male seals not yet old enough or strong enough to defend harems are known as bachelors. Adult bulls may reach a weight of 500 pounds; cows are much smaller and average only about 125 pounds.

Members of the earless seal group have hind flippers incapable of forward rotation. The **Harbor Seal** is quite common in the bays and estuaries of the California coast. They are often seen in Mission and San Diego Bays. This thick-bodied spotted seal cannot use its hind flippers for walking on land; it merely drags them behind. In swimming these flippers serve as rudders. A large harbor seal weighs about 250 pounds. This form occurs from Alaska to Baja California, and closely related races inhabit the waters of the Atlantic states and Europe. The **Hawaiian Monk Seal** inhabits the northern islands of the Hawaiian group. Rare in the wild due to commercial sealing during the 19th century, the species was first shown in the United States in the San Diego Zoo.

Largest of all seals are the elephant seals of which there are two species. The **Northern Elephant Seal** is found off the coast of southern California and Baja California. This seal was at one time on the verge of extinction but due to protective measures taken by the game departments of the United States and Mexico, it is re-establishing itself. The San Diego Zoological Society played an important role in the battle to gain protection for this interesting animal. Bull elephant seals may reach a length of over 18 feet and weigh 5000 pounds. They develop long flexible probosces that resemble short elephant trunks.



ROCK HYRAX: Closest living relative of the elephant.

Elephants

The elephants are the only living representatives of the order Proboscidea. They are the largest of all land mammals and are represented by two species, one in southern Asia and one in Africa. Formerly, however, they were widespread and occurred not only in Europe but also in North America. Fossil remains have been recovered from southern California deposits. Despite tales to the contrary, the average longevity of elephants is less than that of man. Much longer in proportion is the gestation period which varies from 18 to 22 months. The **Bush Elephant** is the race of African elephant that is represented in our collection. This large rangy beast is native to eastern Africa from Kenya to the Cape. Closely related races inhabit central and western Africa. The African elephant may attain a weight exceeding five tons and a shoulder height of eleven feet. A single tusk from a bull weighed 236 pounds. The African elephant is characterized by its large ears and by the presence of two finger-like processes at the end of the trunk. Cows as well as bulls usually have tusks.

The **Indian Elephant** is native to southeastern Asia, Sumatra and Borneo. This is the species usually seen in circuses and zoos. This species is smaller and less lanky than its African relative, seldom reaching a weight of four tons. At birth it weighs around 200 pounds. This elephant has smaller ears than the African variety, only one finger-like projection at the tip of the trunk, and usually only the bulls develop visible tusks. It is used as a riding and work animal.

Hyraxes

Strange as it seems, the little, superficially rodent-like hyraxes appear to bear a closer relationship to elephants than any other living creature. Native to Africa and Asia Minor, these are the creatures referred to as coneys in the Scriptures. Their hoof-like nails and a pair of tusk-like teeth indicate their relationship to the pachyderms. The species usually exhibited here is the **East African Rock Hyrax.**

Odd-toed Ungulates

Most hoofed mammals are placed in one of two categories: those with an odd number of toes and those with an even number. All of the cloven-hoofed mammals belong to the second group. The odd-toed mammals include the horses, tapirs, and rhinoceroses. The most commonly exhibited members of the horse family are the zebras from the plains of eastern and southern Africa. Zebra markings are often compared with human finger prints in that no two animals are striped exactly alike. These animals are extremely nervous and can be savage and dangerous in captivity. Largest of the group is **Grevy's Zebra** of northern Kenya and Abyssinia. This large-eared, mule-like creature is characterized by extremely narrow stripes. It inhabits semi-arid scrubby areas. It was named after Jules Grevy, once president of France. The Burchell's zebras are distributed from northern Kenya south into South Africa. They are chunkier, smaller animals than the Grevy's and their stripes are much broader. A number of races of this species are recognized. **Chapman's**



The MALAY TAPIR is also called the "SADDLE-BACKED" TAPIR.

Zebra of south central Africa and **Grant's Zebra** of the highlands of British East Africa are usually exhibited here. The first is distinguished by tan interspaces between stripes and brown shadow stripes on flanks.

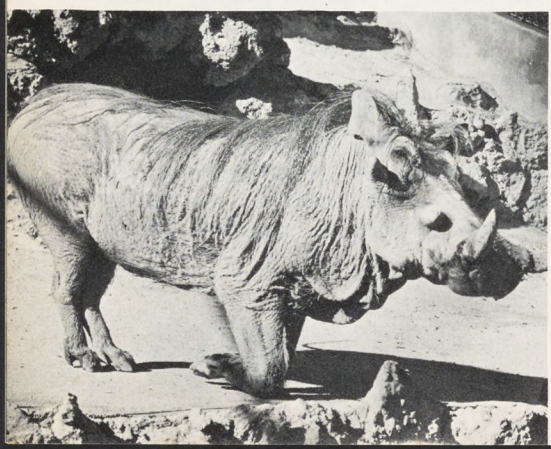
Of the many types of tapirs that existed in prehistoric times, only four have survived; one in southeastern Asia and three in tropical America. These are long-snouted, heavy bodied mammals, semi-aquatic in habit. A large part of the diet is composed of aquatic vegetation. The **South American Tapir** of tropical South America stands about three feet high and has a sparse coat of coarse brown hair and a short, bristly mane. The **Malayan Tapir** is also known as the **Saddle-backed Tapir** because of a large, sharply defined area of gray on its back and sides. Elsewhere the body is black. This tapir stands about 40 inches at the shoulders and weighs about 520 pounds. It inhabits swampy forests from Malaya north to Tenasserim and occurs in Sumatra as well.

The rhinoceroses are confined to the Old World. Three species occur in southern Asia and adjacent islands, two are native to Africa. All are characterized by large size, nearly naked skin and by the presence of horn-like structures on the

Sally and Barney, our African BLACK RHINOCEROSES, in one of their more affectionate moods.

muzzle that are composed of agglutinated hair. The **Black** or **Hook-lipped Rhinoceros,** now becoming rare but once common throughout Africa south of the Sahara, is characterized by a prehensile, pointed upper lip and by the presence normally of two horns, the front one usually being the longer. Rhinos feed entirely on vegetation. Despite their formidable reputation, they are not vicious. Their hysterical charges are generally attributed to panic that results from singularly poor eye-sight.

AFRICAN WART HOG: Note the two pairs of wart-like knobs on its face.



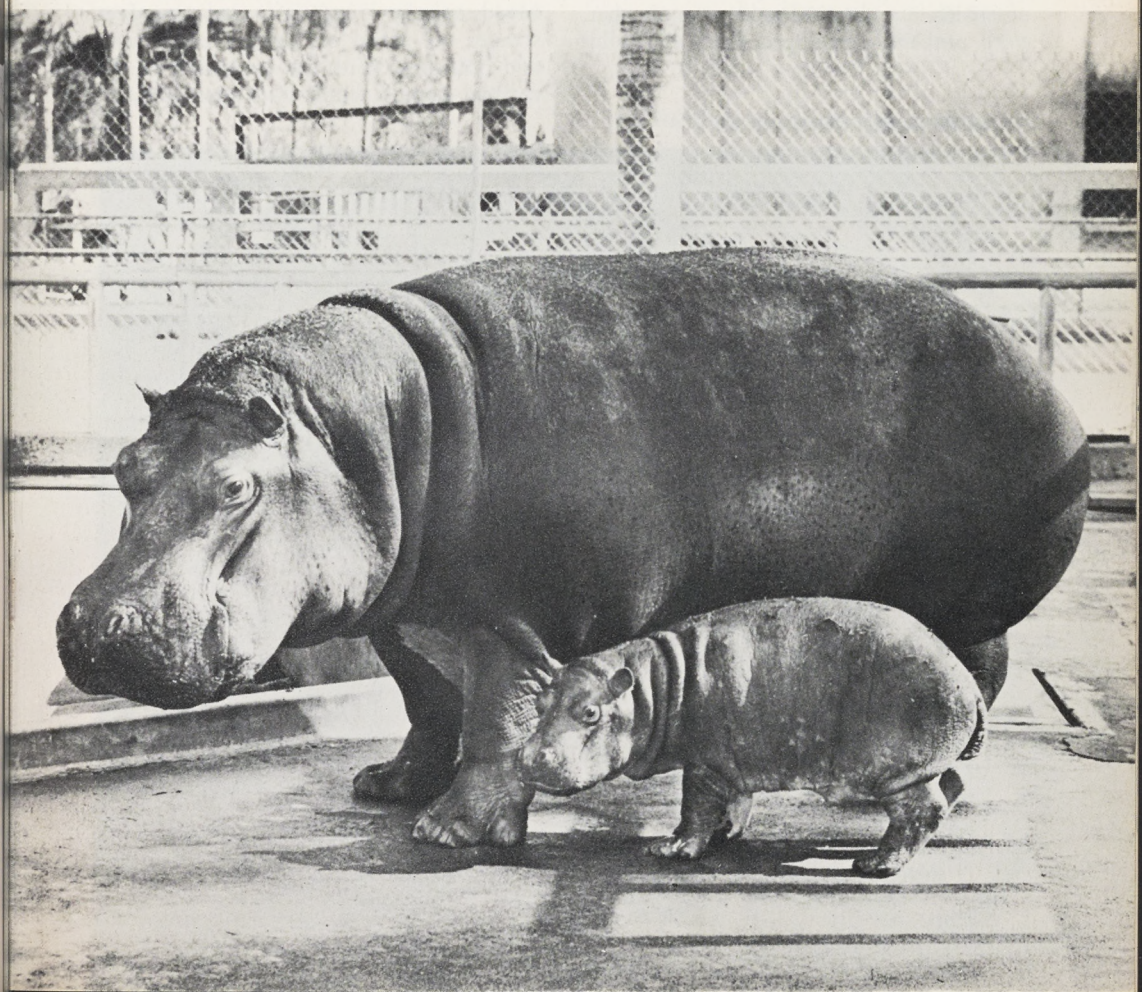
Even-toed Ungulates

This order of cloven-hoofed mammals contains many families that include cattle, goats, sheep, swine, camels, deer, giraffes, antelope, and others. The true swine are native to the Old World, but domestic varieties have been introduced into all parts of the world. Africa is inhabited by a number of these mammals, only one of which is active during the daylight hours. This exception is the grotesque **Wart Hog**

which ranges through much of the continent south of the Sahara. The wart-like protuberances on the face are composed of fat. Males of this species stand about thirty inches high at the shoulder and may reach a weight of 210 pounds. The New World counterparts of the swine are known as peccaries. They are distinguished from their Old World relatives by small size, the presence of three instead of four toes on each hind foot, a well developed musk gland on the back, and short straight tusks. The **Collared Peccary** or **Javelina** ranges from the South American pampas north to Arizona. It weighs forty to fifty pounds when adult. These animals roam in packs and can be dangerous when provoked.

Although the hippopotamuses resemble big pigs, they belong to a family all their own. The family, containing two species, is confined to Africa. The **Nile Hippopotamus** is native to most of Africa's major rivers. Due to man's encroachment, it has disappeared from many of its former haunts, but is still abundant in some areas. The semi-aquatic monster lives in groups and is generally inoffensive where man is concerned, though it can be quite savage when persecuted. Weighing only sixty to ninety pounds at birth, it may reach a weight of four or five thousand pounds when adult. A number of hippos have been reared in the zoo. The other representative of this family is the rare **Pigmy Hippopotamus** of Liberia and Sierra Leone. Weighing 400-600 pounds, this species is far less aquatic than its large relative and prefers to roam alone or in pairs.

NILE HIPPOPOTAMUS: Many young have been born here.

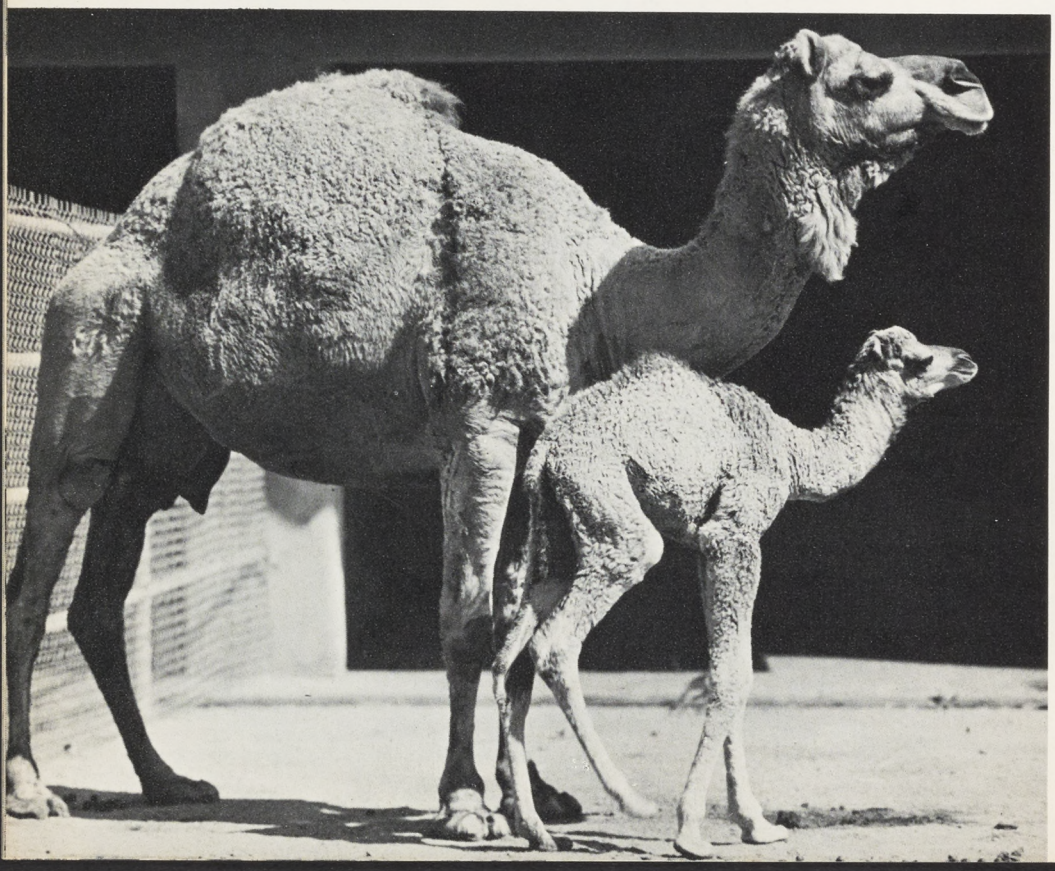


The camel family is represented in Africa, Asia, and South America. Of the six types, three, possibly two, are found in the wild state. The **Arabian Camel** is the single humped variety that is used as a steed and pack animal in the hot deserts of Africa and Arabia. Domesticated for several thousand years, this species does not occur in the wild state. Despite its reputed ability to go without water for long periods, it must drink at least once every three days to remain healthy. The hump is composed of fatty tissue that, in times of drought or famine, breaks down to provide nourishment and metabolic water. Water, as such, is not stored here. The **Bactrian Camel** has two humps. It is used as a pack animal in the high cold deserts of central Asia. This species is believed to exist in the wild state in Chinese Turkestan and Mongolia.

In the New World the camel family is represented by four humpless forms, two of which are domesticated animals that were probably developed from the wild **Guanaco** of western South America, from Peru to Tierra del Fuego. This slender creature thrives up to 15,000 feet in the Andes. Its domesticated descendents are the **Llama,** which is used as a pack animal, and the **Alpaca,** which is bred for its wool. The delicate **Vicunia** stands only 33 inches high at the shoulders and is the smallest member of the family. It is native to Peru, Bolivia, and southern Ecuador. Its silky fleece is in great demand for fabrics and brings fabulous prices in world markets.

The members of the deer family may be distinguished by the presence of antlers in the males and the lack of gall bladder. In addition, most species possess upper canine teeth which are quite well developed in the forms that do not possess antlers. Antlers are branched structures of true bone that are usually shed annually. During growth, they are soft and sensitive and are covered with hairy skin known as velvet. When the antler reaches full size, the blood supply is cut off, and the deer scrapes the velvet off against tree trunks and branches. With the exception of the caribou clan, in which both sexes are ant-

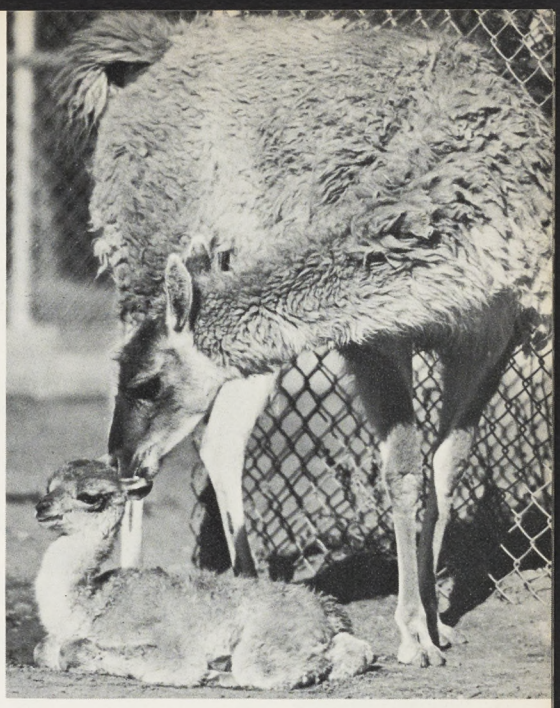
DROMEDARY CAMEL: mother and son.



lered, only bucks develop these structures. Deer are native to Asia, Europe, North and South America.

The wapiti of western United States and Canada, is the second largest of the deer family. Large bucks sometimes weigh as much as 1000 pounds. The **Rocky Mountain Wapiti** is the form usually displayed here. The enormous antlers of the buck are usually dropped in March; a new set is grown in about four-and-one-half months. An average set of antlers dropped by an elk at the zoo weighed 27 pounds. The longest measured four feet, three inches in length. During the breeding season bull wapiti can be quite savage and dangerous.

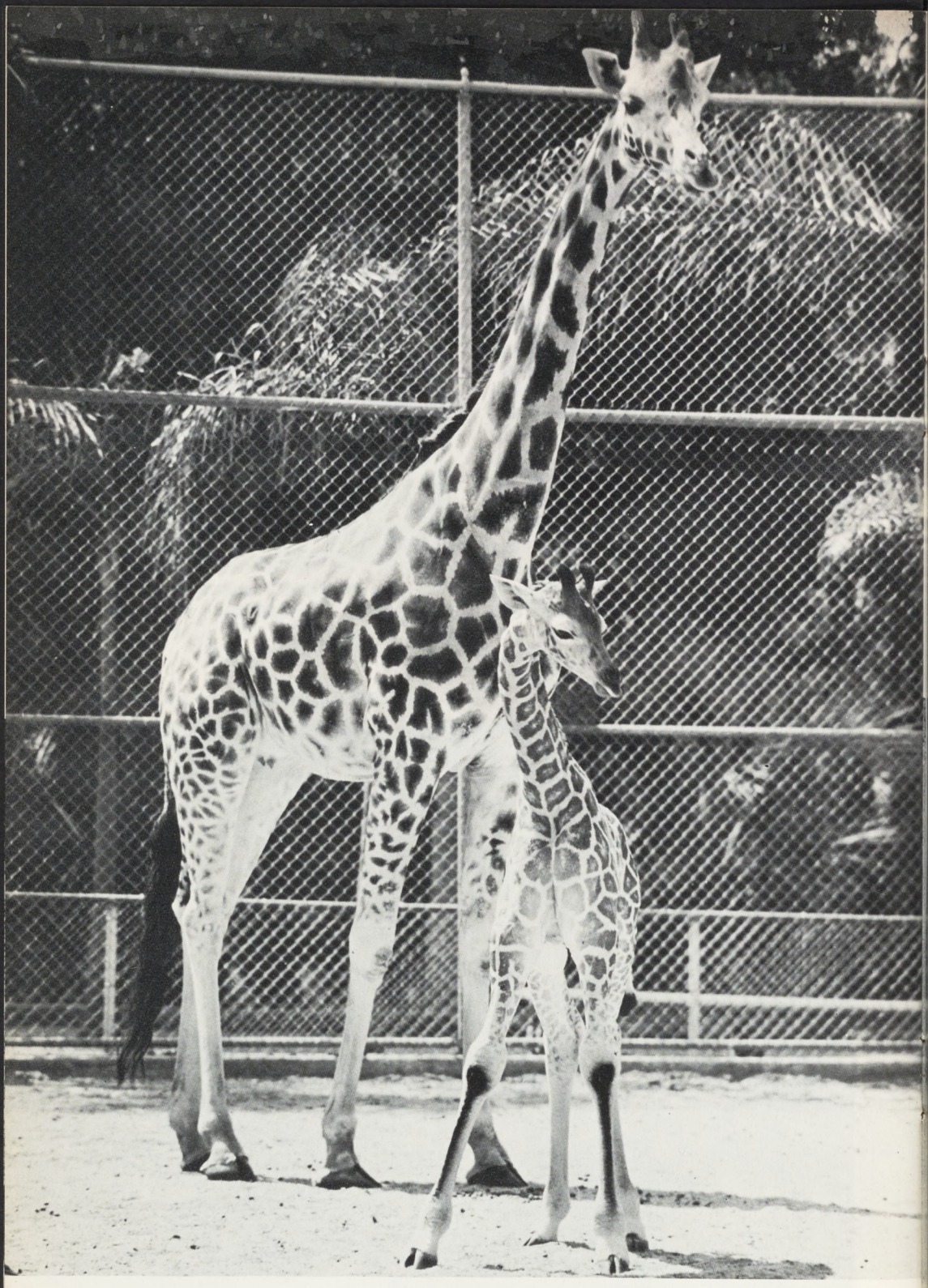
Several forms of Asiatic deer are exhibited here. The **Malay Sambar** and related forms inhabit the high jungles of southeastern Asia. This dark colored deer has heavy antlers equipped with a brow tine and single fork at the tip. Individuals weighing up to 700 pounds have been



The GUANACO occurs from sea level to over 15,000 feet in South America.

The WAPITI is the second largest American deer.





The Zoo's UGANDA GIRAFFES are favorites of visitors.

recorded. The **Sika Deer** and related forms inhabit the Japanese Islands, China and Manchuria. In summer these deer are covered with pale spots which become less evident as winter approaches. The **Fallow Deer** of the Mediterranean countries of Europe, Asia, and North Africa have flattened palmate antlers. Normally brown with white spots, this deer also has white and dark color phases. The tiny muntjac deer, some races of which are only 16 to 19 inches high, are widespread throughout eastern and southeastern Asia. For defense they have long canine teeth, the short antlers being not too useful. Muntjacs are also known as barking deer because of their cries. The **Indian Muntjac** is usually exhibited here.

Most familiar of all American deer are those belonging to the **Odocoileus** group. The **Mule Deer** occurs in western United States and gets its name for its proportionately large ears. It is distinguished from the **White-tailed Deer**, which occurs in great numbers in the eastern part of the country, by the ear size, more subdued color of the tail, and method of branching of antlers. The **Moose** is the largest member of the deer family. It occurs in northern Europe, Asia, and North America. Large bulls of this species may well exceed 1400 pounds in weight. It is characterized by its size, immense spreading, flattened antlers and a pendulous dewlap hanging from the throat. It prefers low wet places, inhabiting spruce forests, swamps, and thickets bordering lakes and rivers. The moose has bred and reared young here. For food it prefers aquatic and semi-aquatic vegetation. About 95 pounds of food a day is consumed by one moose at the zoo.

Tallest of all mammals are the giraffes of Africa. These long-necked animals attain heights of sixteen to eighteen feet and are well equipped to find their fodder in tree tops. In addition to height, giraffes are characterized by hair-covered horns on their heads. The **Uganda** or **Baringo Giraffe** of Kenya, Uganda and southeastern Sudan has been exhibited here for many years. Many youngsters which have been raised here have found their ways to zoos throughout the world. Contrary to common belief, the giraffe is not mute; however, it seldom expresses itself vocally. These animals can deliver quite powerful kicks in almost any direction.



PRONGHORN ANTELOPES are native to the North American plains.

The **American Pronghorn** occurs only in western North America. Although frequently called an antelope, this animal is sufficiently different from all others to rate a family name (Antilocapridae) to itself. It is the only horned animal that sheds its horns each year just as a deer sheds its antlers. These hollow horns are unique in having a branch or prong. They form a sheath to a bony core which is not shed.



One of the mountain "kings," a BIGHORN ram.

Pronghorns are now greatly reduced in numbers though they still may be found in regions where they are afforded adequate protection. One of the fastest of the hoofed mammals, the pronghorn has been clocked at over 60 miles per hour.

The family Bovidae embraces all of the horned mammals except the pronghorn. Included here are the cattle, sheep, goats, antelopes and so-called goat-antelopes. Members of this family retain the horns throughout life instead of shedding them periodically as deer shed their antlers. Among the most picturesque of these mammals is the **American Bison** which roamed the western plains in incredibly great numbers a few years ago. Within a short time, during the 1870s and '80s, their millions were reduced to a few scattered herds. Fortunately, legal protection for the species was brought about, and it survives on various reserves in the United States and Canada. Thus the perpetuation of the only species of wild ox native to our country is assured. The **Yak** of India, Tibet, and China dwells in lands of eternal snows, chill winds, and high plateaus where no other beast of burden could survive. It is a source of clothing and food as well as a mount and pack animal. This animal subsists on tough wiry grass to altitudes of 20,000 feet.

The **African Buffalo** which inhabits Africa south of the Sahara, is considered to be one of the most dangerous of all game animals. Its broad, thick horns meet at their bases to form an almost bullet-proof helmet. The African buffalo, unlike its Asiatic cousin, the **Water Buffalo**, has never been domesticated. Smallest of all cattle is the **Anoa** of Celebes. This rare little ox stands about three feet high and, despite its size, can be extremely dangerous.

Various species of wild sheep occur in North America, Europe, and Asia. One species, the **Aoudad,** inhabits the arid ranges of North Africa. Unlike typical members of this group, the **Aoudad** has long fringes of hair on the chest and forelegs. Also unusual is the fact that the horns of the ewes are nearly as large as those of the rams. The **Bighorn** inhabits many of the large ranges of western North America. Both sexes bear horns, but those of the male are much larger. This sheep is one of the wariest of all American big game and usually occurs far from the haunts of man. During the summer the ewes and lambs usually associate in herds while the rams are solitary or form bachelor groups. As the rutting season approaches in the fall, the males become quarrelsome and, in areas where they occur in any numbers, the air is punctuated with the pistol-like cracks of their horn-crashing fights.

Separation of goats and sheep is a rather difficult task since there are intermediate forms that share characteristics of both. In general, it may be said that males of all goats are characterized by a strong musky odor, males of most species have chin beards, and none of the species of goats have glands between the hooves of the hind feet as is characteristic of sheep. The species of wild goat most frequently seen in zoos is the spectacular **Himalayan Tahr** which occurs above the timberline in the mountains of northern India. An adult male may stand 38 inches high at the shoulders and weigh 200 pounds. Due to their wary natures and the rugged terrain they inhabit they are considered among the most coveted of trophies by sportsmen.

The term "antelope" has little meaning for it is applied to a horde of diverse creatures. Some are no larger than rabbits, others are the size of oxen. The **Nilgai** is a native of India's plains from the Himalayas to south of Mysore. The males are blue-gray, hence the name "blue bull." Males stand 55 inches at the shoulders and have short spike horns. Females are brown and hornless.

Africa is inhabited by a host of antelopes that are allied to the Nilgai. Many of them are marked with white stripes that have caused the group to become known as the "harnessed antelopes." Largest of all antelopes is the **Eland** which formerly inhabited much of east, central, and southern Africa. A large bull may stand five feet nine inches at the shoulders and weigh 1500 pounds. The **Sitatunga** of the papyrus swamps of central Africa is a smaller form with a coarse shaggy coat. Its hoofs are elongate and serve as "mud shoes."

The wildebeest-hartebeest group is represented in most parts of Africa, where some of its members exist in herds of thousands. The **White-tailed Gnu** of the high veldt in South Africa, was once among the commonest of game animals. Now, however, it is extinct in the wild state, and it is to be seen only in zoos and game refuges. The **Blesbok**, another member of the group, was also abundant in South Africa but is now extinct in the wild. Many young of this species have been reared at the San Diego Zoo.

The **East African Sable Antelope** inhabits a coastal strip from Mombasa, Kenya, south to the Kigani River. The three-and-a-half foot scimitar-like horns place it among the world's finest trophies. Many young of this rare species have been born here. The **Beisa Oryx** of east Africa is a related species with long, straight,

SABLE ANTELOPE, with their scimitar-shaped horns, are much prized by sportsmen.





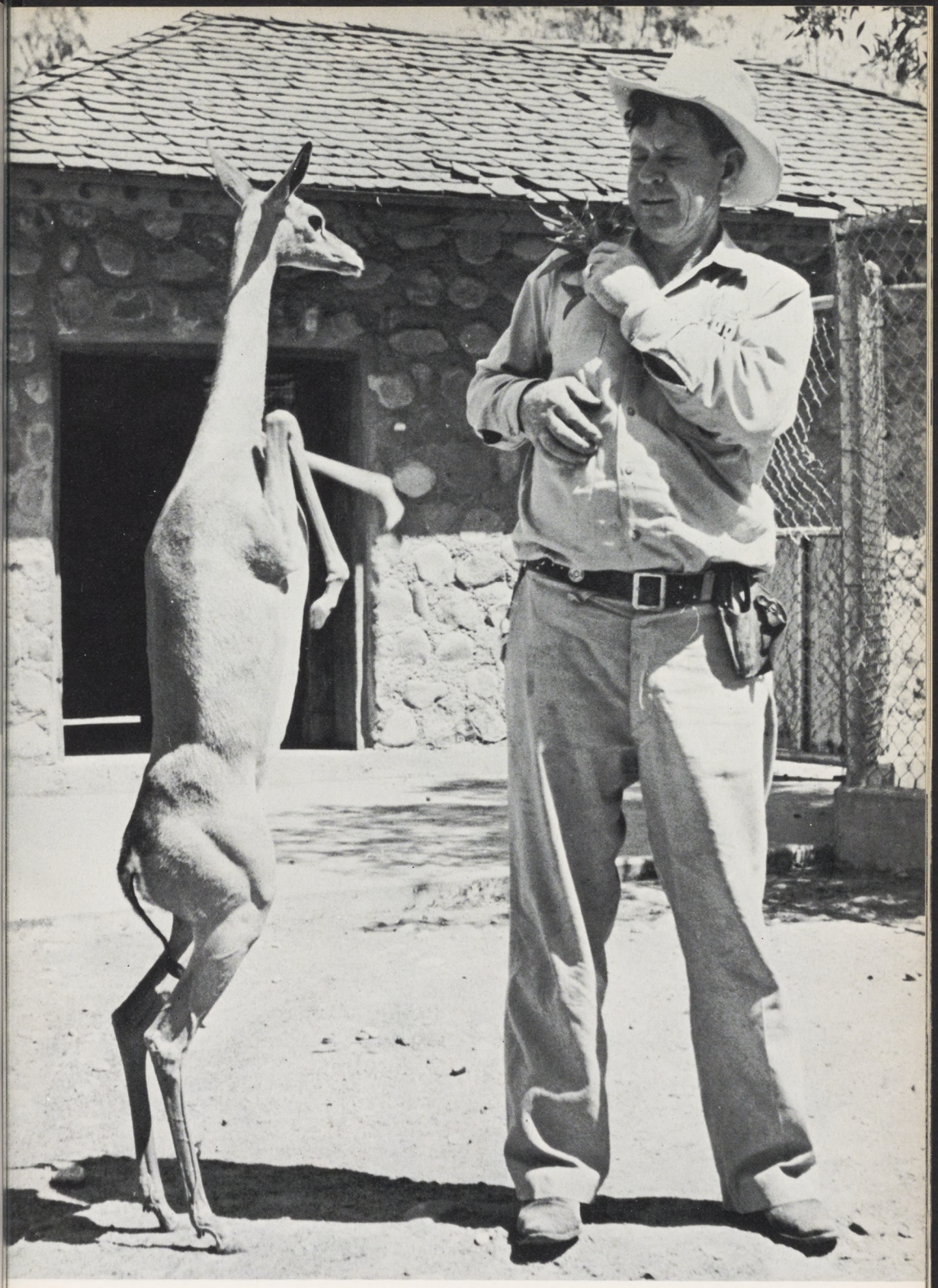
The tiny African KLIPSPRINGER is a champion mountain climber.

lance-like horns. Its black, gray and white markings are quite striking.

The tiny **Abyssinian Klipspringer** stands less than two feet high and is distinguished by coarse, pithy hair and elongated hoofs. Klipspringers are noted jumpers and are found in rocky, mountainous terrain throughout Africa.

The gazelles and their relatives of Africa and Asia are known for their slender bodies, pencil-like legs, and graceful movements. Most have dark stripes on the face. One of the largest of the group is the **Roosevelt's Grant Gazelle** common to East Africa. The females and young males have a dark side stripe. This stripe disappears in the male as it reaches maturity. A closely related animal, the **Springbok** has a strip of erectile white hair down the center of the back and on the rump. This hair patch flashes like a semaphore when the animal is alarmed. The **Blackbuck Antelope** of India's plains-country is notable for the corkscrew horns of the male. The adult males are quite dark colored throughout much of the year while the females are more sandy. In India the Cheetah is trained to run down the speedy blackbuck.

One of the rarest of all antelope in collections is the giraffe-necked, spindle-legged **Gerenuk** from East Africa and Abyssinia. An inhabitant of the arid thorn and acacia studded plains, this browsing animal often stands on its hind legs to crop the tops of the trees. Only the males of this species have horns.



The GERENUK is especially fond of Acacia leaves.



Ten feet in height and weighing 300 pounds, the **NORTH AFRICAN OSTRICH** is the world's largest bird.

BIRDS

Most people, when asked to list those characteristics that distinguish birds from all other types of animals, think first of the power of flight. Yet this ability is neither restricted to birds, nor does it belong to all of them. Many birds, from ostriches to penguins, are unable to fly and some of them nearly lack wings.

The characteristic that belongs to the class of birds alone is the presence of feathers. No other living creatures possess them. There are other animals that fly, others that reproduce by laying eggs, and still others that have beaks. But plumage is a unique avian feature.

There is a far greater diversity among birds than among mammals, the other group of so-called "warm-blooded" vertebrates. While the total number of species (or kinds) of mammals ranges somewhere around 3500, more than 8500 species of birds have been described, and there are probably more than three times that number of subspecies!

Ostriches

Since ancient times, the ostrich, or "camel-bird," has attracted attention and interest. The ostrich is the largest bird in existence today. Standing from six to eight feet high, the males weigh from two to three hundred pounds. The voice of the ostrich is like the roar of a lion. It has been stated that its running speed is from forty to sixty miles an hour.

The ostrich is a native of the flatlands of Arabia and Africa. It lives from twenty to thirty-five years in captivity. The male is deep black with a few scattered white feathers and plumes in the tail and wings. The female is a dusty-brown color with white plumes on the wings and tail. The head, neck and legs are without feathers in both sexes. Ostrich eggs are white and large, weighing from three to four pounds each. Twelve to fifteen eggs are usually laid in the nest, which is a shallow depression in the sand scooped out by the birds with their bills.

Rheas

The rheas of South America are similar in appearance and habits to the ostrich. They are, however, much smaller and have three toes on each foot instead of two, as is seen in the ostrich. They inhabit the pampas country and are sometimes to be seen in large flocks. The **Common Rhea** is exhibited here.

The male rhea incubates the cream-colored eggs and raises the babies. Many rheas have been reared here.

Cassowaries and Emus

Emus are large and flightless birds, like the ostrich. The plumage is hair-like with double feathers, two shafts in a single tube. Both cassowaries and emus are three-toed and have very strong legs and toes which they use for defense.

Emus are found in the deserts and plains of Australia. The general color is grayish-brown. The feathers of the head and neck are black, short and curly. The sexes are alike in appearance.

The eggs are dark green and look very much like avocadoes when first laid. They nest in open places near the base of a tree or stump. From eight to twenty eggs are laid. The males incubate the eggs. Eight weeks of incubation are necessary before the eggs hatch.



The ARU DOUBLE-WATTLED CASSOWARY, a primitive flightless bird of New Guinea, has hair-like feathers.

Cassowaries inhabit tropical Australia and the islands to the north. They stand five feet in height and differ from emus in having a bony helmet on the forehead. The head and neck are naked and usually brightly colored in rich blue, purple and scarlet. Some cassowaries have wattles on the naked neck. The toes have pronounced claws. The inner toe nail is four to five inches in length — a straight, powerful, pointed weapon. Cassowary eggs are light green with a beaded surface. The eggs vary from five to nine in number and measure five or six inches in length and three inches across.

A number of cassowaries have been exhibited here, including the **Double-wattled Cassowary** from the Aru Islands, and the **Single-wattled Cassowary** from Jobi.

Kiwi

The kiwi is by far the smallest of the struthious birds, most of the species being a little smaller than our domestic fowl. They are further characterized by a long slender beak and wings so tiny that they are hidden by the hair-like body plumage. Kiwis are nocturnal birds and frequent tangled bush and grass country, where they use their sensitive beaks in probing for earthworms and larvae that form the bulk of their food.

The kiwi is the only known bird with nostrils at the tip of the beak. At the base of the bill and on the face there is a growth of long bristles, and the legs are particularly large and strong. The bird is a swift runner, but when cornered its main defense appears to be the powerful strokes it is able to make with the feet, the sharp claws inflicting considerable wounds.

The normal clutch is one egg. The incubation is done entirely by the male and lasts from 70 to 75 days. The egg is very large, weighing up to 16 ounces in the case of **Mantell's Kiwi.** The male kiwi weighs four to five pounds, the female between five to six pounds.

The family Apterygidae is composed of five species, all of them inhabiting New Zealand and, although comparatively few people have ever seen a living specimen, they are among the world's best known birds.

Mantell's Kiwi is the only one inhabiting North Island; three others are found in South Island and one on Stewart Island.

Tinamous

Tinamous are South American land birds of partridge type, inhabiting the forested regions and grassy plains. Though very fast runners they have limited powers of flight. Their eggs are oval in shape with a polished waxy shell and a lacquered



"Belle," our MANTELL'S KIWI from North Island, New Zealand, eats one pound of earthworms daily.

finish in colors shading from pink to brown. Several species have been exhibited here, among them: The **Rufous Tinamou,** the **Peruvian Tinamou,** and the **Crested Tinamou.**

Penguins

Most penguins inhabit the frigid waters and coasts of the Antarctic but a few species are to be found in south temperate regions and the diminutive **Galapagos Penguin** is restricted to the group of equatorial islands whose name it bears. The **Humboldt Penguin,** a larger species characterized by a white crescent on each side of its face, inhabits the west coast of South America from Tierra del Fuego to Payta, Peru. The **King Penguin** of southern South America is the second largest penguin of the world's seventeen species.

Pelicans, Gannets, Cormorants

This group is composed of aquatic birds, all remarkable for some peculiarity, and many of them are really fine and handsome birds. All have the four toes of each foot joined together by a web.

The pelicans are large birds found throughout the temperate and tropical region of both hemispheres, three species being found in North America. They have short legs and large wings, some with a wing spread of ten feet. They are strong fliers.

The **Eastern White Pelican** is a large species native to southeastern Europe, India and Africa. The **American White Pelican** is found throughout temperate North America.

The **Peruvian Pelican** is rarely seen in zoological collections. This pelican is found

KING PENGUINS are aquatic acrobats from the Antarctic.





Because it has such tiny wings, the FLIGHTLESS CORMORANT is earth-bound.

along the entire coast of Peru. The skin of the pouch has beautiful blue stripes. The **California Brown Pelican** is very common along our coast. It is one of the smallest members of this family.

The **Gannets** are birds of temperate and tropical seas and are found great distances from land. Their food consists entirely of fish.

The **Blue-footed Booby** is found along the Pacific Coast from Mexico to Chile.

The cormorants are long-bodied birds with slender snake-like necks. The upper beak is distinctly hooked. The plumage is generally dark in color and very thick. Their food consists entirely of fish, which the birds chase and catch under water.

The **Flightless Cormorant,** a gigantic brown cormorant with tiny, functionless wings comes from the Galapagos Islands. It is one of the rarest birds in our collection.

Brandt's Cormorant is found along the Pacific Coast from Vancouver to Cape San Lucas. The throat sac is bright-blue. The



The rare SHOEBILL STORK is considered the finest of all stork-like birds.

Farallon Cormorant is a sub-species of the **Double-crested Cormorant**. These birds are confined to the coast and inland lakes of the Pacific slopes. The throat sac is yellow in color.

The anhingas are slender, long-necked birds which inhabit swamps and river banks. The **American Anhinga** or **Water-turkey** is exhibited here.

Frigate or man-o-war birds are avian pirates that occur over most tropical waters. They steal fish from other birds in mid-air. Their wing-spread is seven feet. The **Magnificent Frigate Bird** of the Galapagos Islands and **Palmerston's Frigate Bird** of the central Pacific have been exhibited.

Storks, Herons, Ibises and Flamingos

The **Shoebill** or **Whale-headed Stork** is well named since its enormous bill bears strong resemblance to a wooden shoe. This grotesque species is found only in the Anglo-Egyptian Sudan and adjacent sections in Uganda and the Belgian Congo.

The **Black-necked Jabiru** is one of the finest representatives of the stork family. It is a contrast in black and white and is native to India and Malaya.

The **European White Stork** breeds in most of continental Europe and in northwestern Africa. This stork is by far the best known of the family in literature and legend. The **Woolly-necked Stork** is a small species native to Africa and tropical Asia.

The **Indian Adjutant Stork** is dusty gray above and white below. The name "Adjutant" originated from its habit of frequenting military parade grounds. This large stork is a native of the Indian peninsula and the Indo-Chinese countries. The smaller **Javan Adjutant Stork** is widely distributed in the Orient and the Indo-Chinese countries also. The **Marabou Stork** is a native of tropical Africa. The beautiful marabou plumes of this interesting bird are sold commercially.

The American **Jabiru** ranges from southern Mexico to Argentina and is the largest of the American storks. It is pure white with the head and neck of coal-black. The base of the neck is red.

The members of the ibis and spoonbill family differ from the storks and herons chiefly in the shape of their beaks. That of the ibis is slender and curved while that of the spoonbill is broad and flattened and resembles a spoon.

The **Scarlet Ibis** ranges from Mexico throughout tropical South America. Beyond a doubt the most beautiful of all the ibises, the plumage is blood red. The **White Ibis** also is found in tropical

America. The plumage is pure white, with black wing tips. The bare face, bill and legs are orange, red, or carmine. This is the bird which is often called the **Spanish Curlew.** The **White-faced Glossy Ibis** or **Black Curlew** is found in tropical and sub-tropical America. It frequents the low, moist grounds about lakes or over flooded meadows. The **Black-headed Ibis** is a native of India, Ceylon and Burma to China and Japan, and the **Straw-necked Ibis** occurs in Australia.

The **Roseate Spoonbill** or **Pink Curlew** has white plumage with a roseate tinge. There is a deep carmine patch on each wing. During the breeding season the under tail coverts are light-orange. This bird has a bare head. In some countries the beak is taken from the bird, scraped very thin, polished and used as a spoon. Sometimes these spoons are inlaid with silver.

All flamingos, with their long necks and legs, are highly specialized in order that they may get food. The bill is bent abruptly downward in the middle, as though deformed. The diet consists of small aquatic creatures which are strained from the water and mud by means of a comb-like structure in the beak. The **Chilean Flamingo** is native to South America. The **American Flamingo** is much more red and brilliant.

The herons are almost entirely waders, feeding on fish, frogs, and the like, sometimes eating water rats. The long beak of the heron is very sharp and dagger-like, and can be used with terrific force as a weapon of offense. Set upon a stick, it is used by some savage tribes as a spear. The **European Gray Heron** is found throughout Europe, Asia, Africa and Australia. It is similar to our **American Blue Heron.**

The **Nankeen Heron** of Australia has a reddish-brown body, a black crown very like the **Black-crowned Night Heron** or **American Night Heron,** found in North and South America. Two narrow, white plumes, seven to eight inches long, are grown during the breeding season by the adult birds. The **Louisiana Heron** is found in the southern United States and the West Indies. Truly a southern species, this little

Spoonshape bills of the ROSEATE SPOONBILL HERON are inlaid with silver and used as spoons by natives of Tropical America.



heron is called the "Lady of the Waters", a gentle and graceful member of this interesting family.

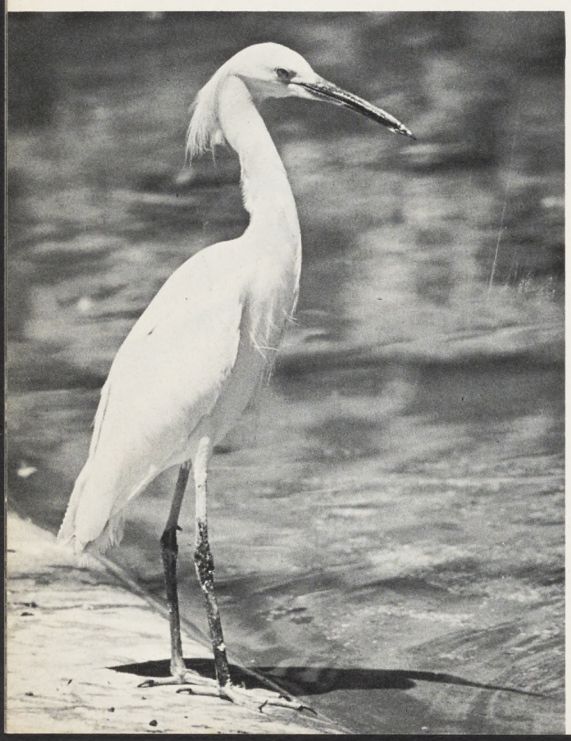
The **Cattle Egret** is found throughout Asia and into Africa and is one of the smallest members of this family.

The large egrets form a very interesting and showy group. The **American Egret** ranges in temperate and tropical America to Patagonia. The long white plumes, known as "aigrettes," grow on the back of this bird during the mating season. These birds have a bright-yellow bill. The **Snowy Egret** or **Little Egret** is found in both North and South America. Their "aigrettes" are much shorter, more delicate and recurved at the ends. They have black legs and the feet are bright yellow.

The **Reddish Egret** is distributed throughout tropical America. This egret is reddish-gray in color and is very seldom exhibited. These birds have nested and raised young in our large shore and water bird flying cage.

The **Southern Boatbill Heron** ranges from northern South America to southern Brazil. This bird resembles the night heron but differs in having a long black crest and a widened beak. This bill is three or four inches in length and some two inches in width. The general color is pearl-gray above with the back, rump and tail a darker gray, while the crown and crest are blue-black. The breast and abdomen are a cinnamon brown. The beautiful crest is raised when the bird is frightened or when angry, and the general effect is very like that of an Indian war bonnet.

The AMERICAN EGRET is famous for its delicate white plumes, known as "aigrettes."



Screamers, Swans, Geese and Ducks

The screamer family, which is closely allied to that of the swans, geese and ducks, is limited to South America. Its members are turkey-sized birds with small heads and fowl-like beaks. Their legs are thick and strong, and the toes are remarkably long. Their wings are large and broad and each is armed with two powerful spurs which are used chiefly for defense. They are called screamers because of their shrill, strident cries.

The **Crested Screamer** of Paraguay, Brazil, Argentina, and Uruguay is a smoky-gray bird with white cheeks and chin, a narrow black ring about its neck, and a conspicuous tuft of feathers on the back of the head. The feet and legs and the bare skin about its eyes are red. The **Black-necked Screamer** of Colombia and Venezuela is very similar but the black band about the neck is much broader. The **Horned Screamer** of tropical South America has a horn-like projection on the head.

The **Mute Swan** is the swan most frequently kept in captivity. It has a wide range which extends from Europe to Mongolia. It can be recognized by the orange upper bill and the overhanging black knob. The **Whooper Swan** is an enormous, all white species native to northern Europe and Asia. The **Black-necked Swan** of southern South America is white with a black head and neck. The knob on

The BLACK-NECKED SCREAMER is a primitive semi-aquatic bird from Venezuela.

One of the most beautiful of waterfowl and a giant among swans is the WHOOPER SWAN from Europe.



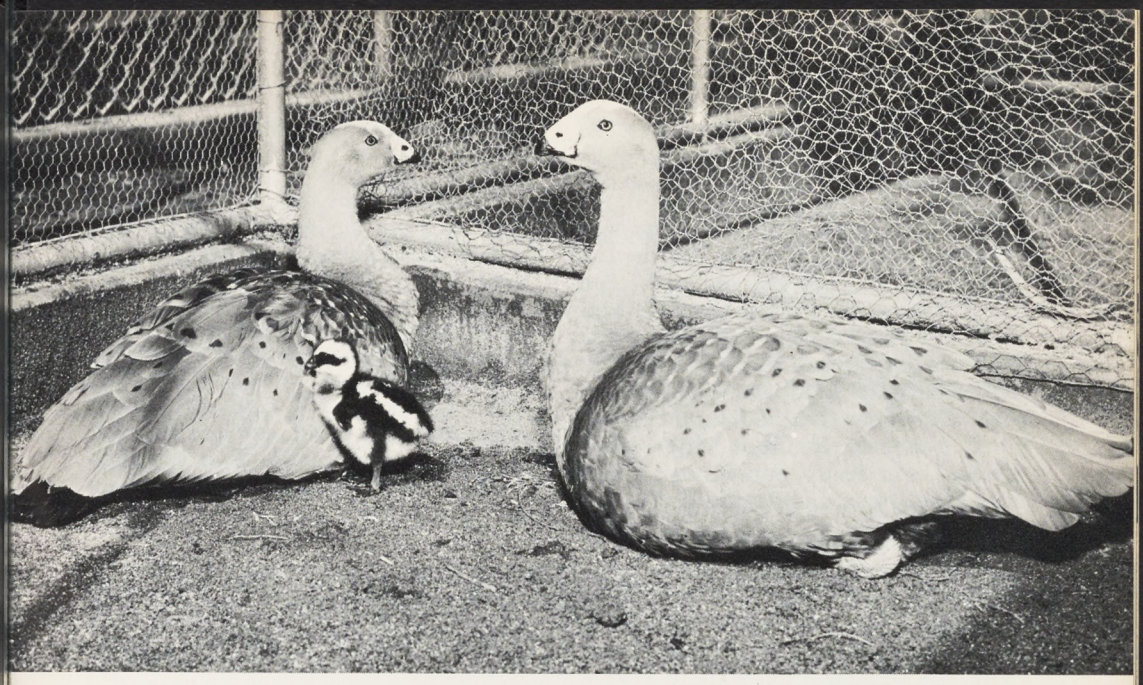
Southern South America is the home of the snow-white COSCOROBA SWAN.

the bill is bright red. The **Black Swan** of Australia and Tasmania is, as the name indicates, black. Its feathers are glossy and those of the wings are curled. The **Whistling Swan** of North America is pure white. The bill and the feet are black. The **Coscoroba** of southern South America is a borderline bird which is most closely allied to the swans, although in shape and proportions it resembles a giant tree duck. It is pure white with a red bill and feet.

The tree ducks are an interesting group which combine characteristics of the typical ducks, geese, and swans. Their long necks and legs and high whistling voices are distinctive. Some members of this group are known to roost and nest in trees, hence the name. The **Fulvous Tree Duck** is the species which inhabits western North America, Mexico and South America. It is chiefly fulvous (dull brownish yellow) with a black bill. A closely related but smaller form, the **Lesser Fulvous Tree Duck**, is found in the East Indies and Australia. The **Black-bellied Tree Duck** is native to the American tropics. Its bright red bill is distinctive. The **Gray-necked Tree Duck** is a similar form which is restricted to Panama, northern South America and the Lesser Antilles. The **West Indian Tree Duck** is native to the Bahamas, the Greater Antilles, and the northern Lesser Antilles. It is mottled brown in color and has a black bill. **Eyton's Tree Duck** is a rare species native to Australia with plumes on the flanks.

The term "goose" is actually a very vague one, for it is used to describe a great many and often very distantly related birds.

The **Semi-palmate** or **Magpie Goose** is a somewhat rare and very primitive form native to Australia and southern New Guinea. The first of its names arises from the partially webbed condition of its feet and the second from its black and white coloration. The **Egyptian Goose** is rusty in color with white wing coverts and red feet and bill. It occurs throughout the major portion of Africa as well as southern Palestine and has been recorded in Europe. The **Orinoco Goose** of the Orinoco and



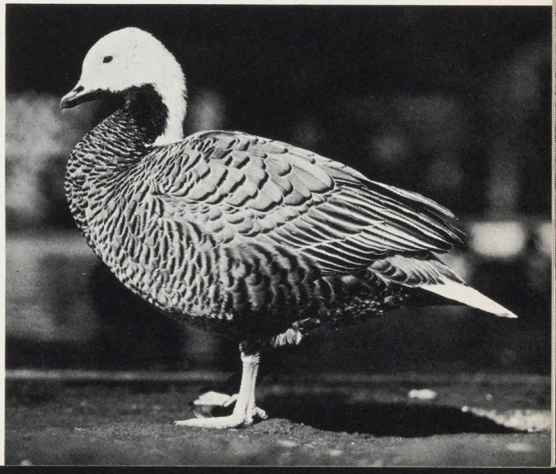
CEREOPSIS GOOSE from Australia, with striped gosling.

Amazon basins in South America is a distant relative. This goose is brown, with green wings and white wing speculum. The **Magellan Goose** is a handsome species native to southern South America. The male is white with black barring, and the female is brown with black barring. In the smaller **Ashy-headed Goose** of the same region both sexes are colored alike, brown with black barring, and with a gray head. The rare **Andean Goose** is white with black wings. The **Cereopsis Goose** of the islands off southern Australia is gray with a black bill and a chartreuse cere. The **Maned Goose** is a miniature species native to the Australian mainland. The **Abyssinian Blue-winged Goose** is gray with blue wings.

The **Lesser Snow Goose** is white with black wing tips. It breeds in northern North America and Siberia and winters in temperate United States and Japan. The **Blue Goose** is restricted to eastern North America. The **White-fronted Goose** is a small brown bird which breeds in the Arctic and winters south to Mexico, Japan, and the Mediterranean. The **Bar-headed Goose** is an Asiatic species with conspicuous black bands on the head. The **Emperor Goose** inhabits the coasts of Alaska and Siberia.

Canadian Geese are represented in the zoo by several forms, all of which have brown bodies, black necks, and white cheeks. The largest of these is the **Common Canada Goose**. Others include the **White-cheeked, Hutchins Goose** and the **Cackling Goose**. The **Black Brant** is a small marine member of the group. It breeds in the Arctic and migrates to southern California in winter. The **Barnacle Goose** breeds in northern Europe and Asia and the rarely exhibited **Red-breasted**

EMPEROR GOOSE, least known and handsomest member of North American waterfowl.



Goose nests on the Siberian tundra. The last named species is undoubtedly the handsomest of its clan.

North American ducks are always well represented in the collection, and the following are to be looked for in the San Diego Zoo's pools: **Pintail**, of which thousands of wild specimens winter in the zoo, **Green-winged Teal, Black Duck, Mallard, Gadwall, Baldpate, Blue-winged Teal, Cinnamon Teal, Common Shoveller, Canvas-back, Redhead, Ring-necked Duck, Lesser Scaup, Surf Scoter, American Goldeneye,** and **Ruddy Duck.**

The **Wood Duck** is considered to be the most beautiful of the North American ducks. It breeds sparingly throughout the temperate parts of the continent and nests in trees. A closely related and very similar form, the **Mandarin Duck**, inhabits eastern Asia.

Of the many exotic ducks which the collection has contained at one time or another, probably the rarest is **Baer's White-eyed Duck** which inhabits eastern Asia. It is a drab little duck, the male of which has white eyes; hence, the name. Our specimens, which came from Siam, are believed to be the first to be exhibited in North America. The **Red-Crested Pochard** of Asia and northern Europe and the **Rosy-billed Duck** of South America are two other pochards that are shown here.

The **Bahama Pintail** is a white-cheeked species native to the Bahamas, the Antilles, and northern South America. The **Yellow-billed Duck** of eastern Asia, the **Australian Black Duck** of Australia and Tasmania, and the rare **Koloa** or **Hawaiian Duck** are all members of the mallard clan. The **European Widgeon** is a grayish duck with a cinnamon-colored neck and head and a gold forehead, and the **Chiloe Widgeon** of South America has a white forehead with a greenish-purple nape and hindneck. The **Garganey Teal** is a small Old World species which is chiefly gray in color with a white crescent over the eye. The little known **Andean Crested Duck** inhabits western South America at high altitudes.

The **Wild Muscovy** is a large black duck native to the American tropics and from it the domestic form has been derived.

The **European Shelduck** is one of the handsomest members of the entire family. It is white beneath, brown on the back, has a greenish-black head, a chestnut stripe across the breast, and a bright pink bill. The rare and beautiful **Paradise Shelduck** of New Zealand is truly a gem among waterfowl.

Vultures, Eagles, Falcons and Hawks

The birds of this group seek their food by daylight and are chiefly flesh eaters and birds of prey.

The **Secretary Bird** is a long-legged, long-necked, hawk-like bird which inhabits the African veldt. It feeds upon small mammals, small birds, and reptiles.

The New World vultures are slow, sluggish birds, feeding on carrion and have slightly hooked beaks and perforated nostrils. The feet have no grasping power. These birds excell in soaring and are past masters in flying. The **Andean Condor** inhabits western South America from Venezuela to Patagonia. This is the largest of the birds of prey. One male on exhibit in our large flying cage has a wing spread of ten feet two inches from tip to tip. In color the male condor is glossy-black with an ashy-white bar across each wing. The base of the neck has a beautiful ruff or large collar of snow-white resembling a lady's powder puff. Nine **Andean Condors** have been hatched and raised in the San Diego Zoo.

The **California Condor** is among the rarest of North American birds. It now appears to be limited to Southern California, being most numerous in a protected

area in the mountains of Ventura County. This great vulture has a wingspread of from eight-and-a-half to nine-and-a-half feet. It feeds chiefly on carrion. A breeding pair of condors may rear one baby every year. The species was exhibited here for eleven years.

The **Black Vulture** is found throughout the whole tropical and warm temperate sections of America. This is one of the smallest vultures and mainly an eastern one. The **Turkey Vulture** or **Turkey Buzzard** is one of the most familiar and widely distributed members of this group. The **King Vulture** lives in tropical America, from Mexico to northern Argentina. This vulture is the most brilliantly colored and striking of all. It is a forest loving bird, and four years are required before it attains the brilliant mature plumage.

With a few exceptions, the Old World vultures are large birds with strong feet, rather blunt claws, and featherless head and neck.

The SECRETARY BIRD is protected in Africa because of its snake-killing ability.



Griffon or **Fulvous Vultures** range over eastern Europe, nearly the whole of Africa, and on through Persia to India and the Malay Peninsula. They prefer open country and nest on rocks. The **Pondicherry Vulture** is found in the Indian peninsula and among the Indo-Chinese countries. This is one of the so-called "eared vultures", with folds or lappets on the sides of the head.

In the group of eagles are found birds noted for their strength and ferocity. Unlike vultures, they have the ability to clutch with their feet. As a general rule, eagles feed on living prey. The **Golden Eagle** has the widest distribution of any species. It is a native of Europe, Asia, North Africa, and North America south to central Mexico.

The **Bald Eagle** of North America is brown with a white head and tail. It feeds mainly on fish and is found only near water. The closely related **Steller's Sea Eagle** of northern Asia is the largest of all

The BALD EAGLE is familiar as the emblem of our Country.





MONKEY-EATING EAGLE, rarest eagle in the San Diego Zoo, feeds on Green Macaque Monkeys in the mountains of the Philippines.

eagles. The **Short-tailed Bateleur** inhabits Africa, while the enormous **Wedge-tailed Eagle** is found in Australia. The spectacular **Monkey-eating Eagle** is a seldom exhibited forest dwelling species. The **African Crowned Eagle** has a brown body with salmon-colored flecks and a high chest. The crested, gray and white **Harpy** of the American tropics has also been exhibited.

Of the native hawks, a few species are on exhibit, among them the familiar **Red-tailed Hawk** and the **Swainson's Hawk**.

The **Galapagos Hawk** is a rarely exhibited form that occurs only on the Galapagos Islands. The **Hawaiian Hawk** or **Io** is found only on the island of Hawaii. It has two color phases, dark-brown and buff.

The **Tawny Hawk** ranges from Argentina north to Panama. The **Whistling Hawk** of Australia is one of the swiftest flying of the foreign hawks on exhibit. The **Brahminy Kite**, which ranges from India to Australia, is a striking red and white bird with the entire back red and a white front. Each feather is faintly penciled with black. This is a fish-eating hawk.

The family of falcons obtain their food by striking it while on the wing. This family includes the **Carrion Hawks** as well. Their savage disposition, swiftness of flight, and keen vision are the reasons for their centuries-long employment in the art of falconry.

The **Duck Hawk** or **Peregrine Falcon** is distributed throughout North and South America. Among birds it has no superior and is truly one of the most beautiful of our North American hawks. The **Prairie Falcon** ranges from the eastern border of the Great Plains to southern Lower California and Mexico.

The caracaras are vulture-like hawks found in Central and South America. Being chiefly carrion eaters, they are valuable in the cattle districts of South America. **Audubon's Caracara** ranges from the southern border of the United States south through Mexico to Guiana and Ecuador. The **Carunculated Caracara** is native to Colombia and Ecuador. This handsome black and white hawk is rarely exhibited. The **Chimachima** or **Yellow-headed Caracara** is a small species that occurs from Panama to Argentina.

Owls

There are few groups of birds so distinctly different as the owls, and so easy to recognize. Consequently, they are well known to everyone. Owls, almost without exception, are nocturnal in their habits.

Among the owls usually on exhibit in the zoo are the **American Barn Owl** commonly called "**Monkey-faced**" **Owl**; the **American Long-eared Owl**; the **Short-eared Owl**; and the horned owls of America, including the **Great Horned Owl** of eastern North America, the **Western Horned Owl** of the western United States, and the very dark **Dusky Horned Owl** of the Pacific Coast region.

Other native owls that have been shown here include the **Barred Owl** of eastern and southern United States, the diminutive **Screech Owl** of the coastal regions of southern California, the diurnal **Burrowing Owl** of the southwestern states, and the insectivorous **Elf Owl** of the desert areas.

A number of exotic forms have been exhibited, the most spectacular of which is the **Fishing Owl** of Malaya and Indonesia. The **Spectacled Owl** of the American tropics owes its name to the conspicuous ring around each eye. The **Boobook** is a small form native to eastern Australia, while the **Barn Owl** group is represented in the "land down under" by the **Masked Owl**.

The **Snowy Owl** is an Arctic species that occurs in both Eastern and Western Hemispheres. It is partially migratory and sometimes invades the northern United States in considerable numbers during the winter months.

Pheasants, Quails, Grouse and Other Fowl-like Birds

This group is a large one of world wide distribution. To the order belong the mound builder family, the curassows, pheasants and poultry, the guineafowl, and the turkeys.

The **Brush Turkey** or **Australian Mound Builder** is found chiefly in southern Australia. Most species in this family gather large quantities of decaying vegetation, brush them into a mound, lay their eggs and cover them with more vegetation. The heat generated by the decaying vegetation hatches the eggs. The general color of the **Brush Turkey** is black with bare reddish head and yellow neck wattle.

The curassows, guans and chachalacas are native to the forests of tropical America. They are large and heavy with powerful legs and feet. The males are usually purplish-black in color with white underparts, crested heads and brilliant wattles.

The **Crested Curassow** occurs from Mexico south to Ecuador while the somewhat similar **Daubenton's Wattled Curassow** inhabits British Guiana and Venezuela. The **Razor-bill Curassow**, so-called because of its vertically compressed red beak, is native to the Amazon forests. Rarest of the forms shown here is the **Nocturnal Curassow** of Ecuador, Peru and Brazil.

The guans, smaller birds than the curassows, have similar habits. The general color is black or brown with variations. The **Purplish Guan** inhabits most of Central America and Mexico. The **Crested Guan** and **Pileated Guan** come from Brazil.

The chachalacas are still smaller than the guans. Their general color is olive brown. The **Red-tailed Chachalaca** of Venezuela is exhibited in the large flying cage. The **Northern Chachalaca** is found from southern Texas to Mexico. Numerous species run loose in the Gardens. Ours raise their young each year in the Gardens and are as tame as domestic chickens.

The pheasants are ground-loving birds, running with great speed, and always prefer to trust their legs rather than their wings. Many of the species live well and breed easily in captivity, so they are always interesting exhibits.

The **Reeve's Long-tailed Pheasant** and the **Elliot's Pheasant** are shown in the zoo's collection.

The **Golden Pheasant**, the **Lady Amherst Pheasant**, and the **Ringneck Pheasant** are shown in the flying cage. The **Silver Pheasant** is Himalayan in distribution and many roam at liberty in the zoo.

A game bird, the NOCTURNAL CURRASOW of South America lives in burrows.

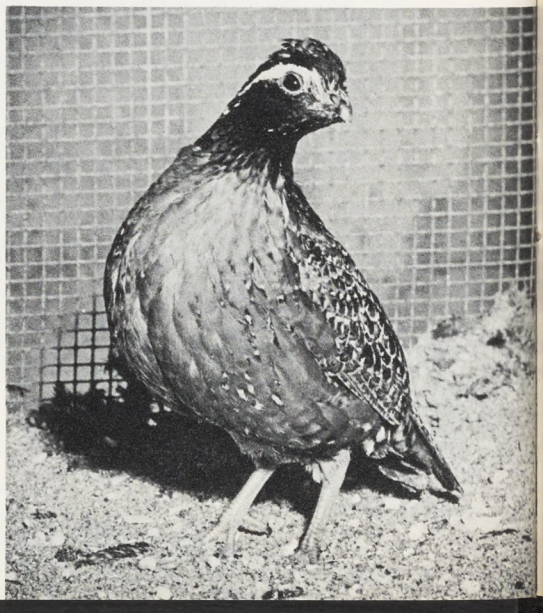


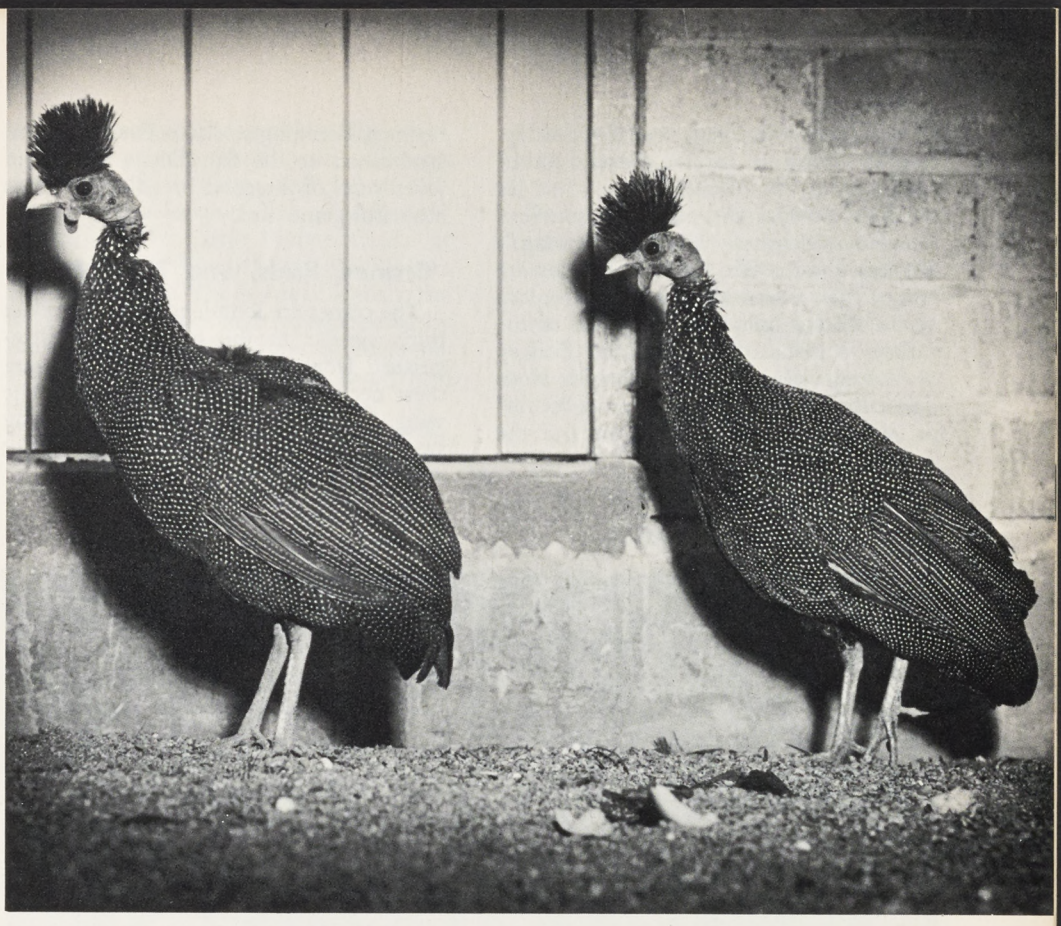
INDIAN BLUE PEAFOWL in full courtship display.

The jungle fowl, which are closely related to the typical pheasants, are the ancestral forms from which domestic chickens were derived. The **Red Jungle Fowl**, which occur in hundreds free on the Zoo grounds, have an original habitat of south and central India, the lowland belt at the foot of the Himalayas, Assam, Burma, Ceylon, and throughout all the countries to the southward. The **Gray Jungle Fowl** is native to western and southern India and the **Green Jungle Fowl** inhabits the East Indies.

Peafowl may safely be termed the most magnificent of the feathered tribe. These birds are recognized at once by their beautiful trains, found in the males. They roam free in the Zoo and attract attention on each mesa and canyon. The **Indian** or **Blue Peafowl** from India and Ceylon, and

The MASKED BOBWHITE is a nearly extinct form native to Arizona and Sonora.





A native of Africa, the CAMEROON STRAIGHT-CRESTED GUINEA FOWL is a rarity in Gallinacious Birds.

the **Green** or **Javan Peafowl** from Burma and Siam, are shown.

Most popular of all American quails, of course, is the **Bob-white** or **Virginia Quail.** The **Masked Bob-white** is a nearly extinct form native to Arizona and Sonora.

The **California Quail**, an elegant, graceful and lively native quail, wins new friends every day with its little bobbing crest. It is seen throughout the gardens in complete freedom. The **Rain Quail** is from India, while the smallest of all the quail family, the **Painted** or **"Button Quail"**, are from the Philippine Islands. The **Chinese Bamboo Partridge** is a handsomely marked species native to China and Formosa. The **Chukar Partridge** has a wide distribution in Europe and Asia and is a game bird in the United States. **Sharp's Francolin** is a partridge-like bird native to Ethiopia.

All the guineafowl come from Africa. Some thirty-five forms are known. The domesticated guineafowl is believed to have been derived from the **West African Wild Guineafowl.** Guineafowl, like the peacocks, are liberated in the Zoo. The **Vulturine Guineafowl** of the East African deserts is so named because of its naked head. The most remarkable form we have on exhibit is the **Cameroon Straight-crested Guineafowl.**

The turkeys are the largest (heaviest) of the game birds and are too well known

as domesticated birds to need any description. In its original habitat, the wild turkey ranges from the Atlantic Coast to as far north as the Dakotas, and from southern Ontario to southern Mexico. **Merriam's Turkey** and the **Rio Grande Turkey** are two of the forms which have the freedom of the Zoological Gardens. Rarest of the turkeys is the beautiful **Ocellated Turkey** of Yucatan, Guatemala and British Honduras. It is so called because of the "ocelli" or eye-spots on the terminal ends of the feathers. Breeding stock has been very well established at the San Diego Zoo after seven years of intensive breeding with this beautiful game bird.

Cranes, Rails, and Trumpeters

The cranes are long-legged, long-necked birds similar to the herons but distinguished from them in flight by carrying their necks extended at full length. The wing feathers are extended into a long sweeping cover for the short tail, adding grace and beauty.

The Zoo has breeding flocks of OCELLATED TURKEYS from Honduras.



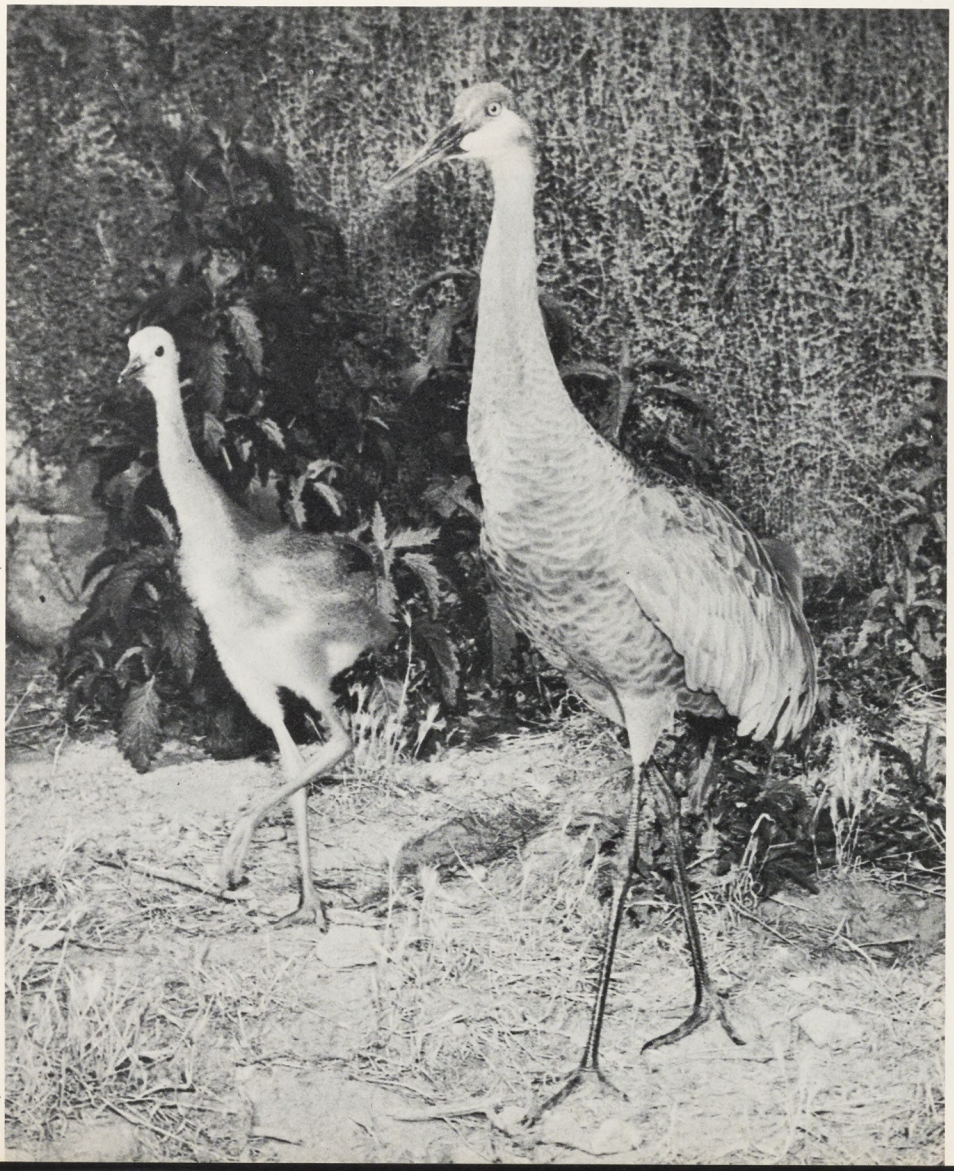
The **Manchurian Crane** is a large black and white species which nests in Siberia and migrates to China and Japan. **Lilford's Crane** inhabits Europe and Asia. Similar are the **Little Brown Crane** of western North America and the **Florida Sandhill Crane**. The **Sarus** of India is the largest of all cranes and is represented by the smaller **Sharp's Crane** in Malaysia. The **White-naped Crane** is a lovely bird native to eastern Asia.

Smallest of all cranes is the **Demoiselle**, native to southern Europe, western Asia and north Africa. The **Stanley** or **Paradise Crane** is closely related and occurs in South Africa.

The Crowned Cranes of Africa are characterized by their lovely gray and black plumage, pink and white cheek patches, and golden crests. We have exhibited two forms here: the **Cape** and the **Sudanese.**

The rails are small birds, living in swampy, marshy regions, with very secretive habits. The rails have more or less

FLORIDA SANDHILL CRANE with young.



pervious nostrils, long slender toes, a compressed body, and short tail.

Of our native North American species, we usually have on exhibit the **Light-footed Rail,** the smaller **Virginia Rail** which is darker in color than the **Western Clapper,** but similar, and the little **Sora** or **Carolina Rail** with its short, stout bill. The **Cayenne Wood Rail** is from the American tropics.

The gallinules are birds with a rich and variegated plumage. The **American Purple Gallinule** has been called the most beautiful of our southern water birds and is found in the tropical and subtropical regions of America. The head, neck and breast are deep blue; the back and wings are olive green. The frontal shield is bright-blue and the beak is red. The legs are a brilliant yellow. The **Black-backed Gallinule** of Australia is one of the largest gallinules and is similar in coloration, but the colors are not so vivid. The coots are black dumpy birds closely related to the rails and gallinules. Both the native **American Coot** and the **Yellow-billed Coot** of South America have been shown here.

The **Kagu** is confined to the island of New Caledonia. Uniform gray-blue, it has a long crest which it spreads when frightened or courting.

The seriemas are tall, long-legged birds with slightly hooked beaks. Their diet includes snakes, lizards, small mammals and insects. The **Crested Seriema** is brownish and is found in Brazil, Argentina and Paraguay, while the small gray **Burmeister's Seriema** occurs only in northwestern Argentina.

A 22-year resident of the Zoo is this CRESTED SERIEMA from Bolivia.



The trumpeters are small, primitive members of the crane clan that inhabit swampy forests in tropical South America. All are black with the exception of wing coloration. We exhibit the **Green-winged,** the **Dusky** and the **White-winged Trumpeters.**

Shore Birds and Gulls

The oyster-catchers are stout-bodied birds with red bills and white and black or brown plumage. The **American Oyster-catcher** occurs along the Atlantic Ocean.

The true plovers are short-legged shore-birds with rounded heads and prominent eyes. The **European Lapwing Plover** of northern South America, is crested. The **Killdeer Plover** is probably the best known of all the plovers.

The sandpiper family contains many forms, both large and small. Some have a slender slightly upturned bill, while that of the **Willet** is stout and straight. The **Black Turnstone** is a small black and white species, and like the foregoing is a native form.

The stilts and avocets are graceful birds with slender, upcurved bills. The **Black-necked Stilt** is native, while the **Brazilian Stilt** inhabits much of South America.

The gulls, so plentiful along our sea coasts and inland lake shores, are familiar to everyone. In the zoo, the gull population is a changing one; however, the following species have been represented. Among the local forms are such birds as **Heermann's Gull,** the **Ring-billed Gull,** the **Herring Gull,** the **California Gull,** and the **Western Gull. Franklin's Gull** and the **Laughing Gull** are distinguished by their dark head plumage. The **Great Black-backed Gull** of the North Atlantic and the **Kelp Gull** of southern South America have dark gray mantles. Other foreign species include the **Dusky Gull** and the lovely **Silver Gull** of Australia and South Africa.



BLACK-NECKED STILT is one of our North American wading birds.

The SILVER GULL from Australia is silver in color with a red bill and red feet.



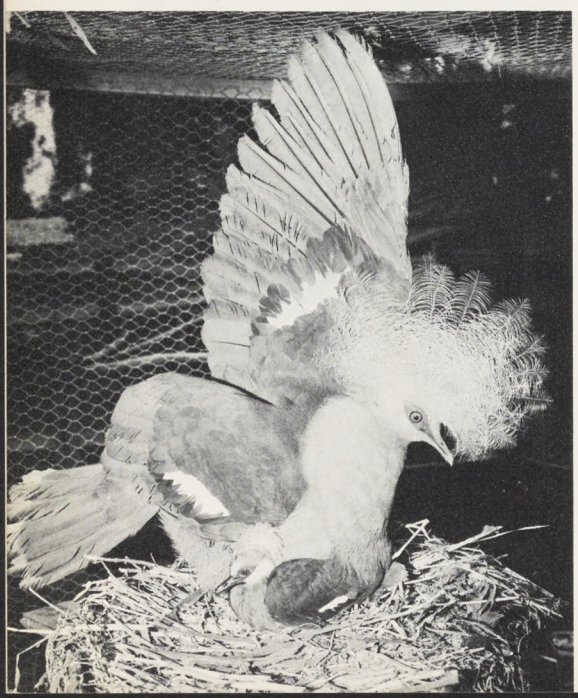
Pigeons and Doves

The splendid crowned pigeons are indisputably the most conspicuous of all their tribe. The great size and beautiful crests render them striking objects, even at a distance. The **Great Crowned Pigeon** is native to New Guinea and the **Victoria Crowned Pigeon** is found in the Jobi and Biak Islands. The **Argentine Spotted Pigeons** and **Fiji Island Pigeons** are also exhibited. The **Nicobar Pigeon** is one of the hackled pigeons, and is found on the island of Nicobar and in New Guinea. In addition the following pigeons have appeared in our collection: **Rufous Pigeon; the Triangular-spotted Pigeon; the Common Bronze-winged Pigeon; the Brush Bronze-winged Pigeon** and the **Australian Crested Pigeon** from Australia; the **Imperial Fruit Pigeon** from the Malay Peninsula and India; the **Band-tailed Pigeon** of the western United States; the **White-crowned Pigeon** ranging from Florida to the West Indies and along the coast of Central America. We show two species of the bleeding heart pigeons, the **Luzon** and **Bartlett's**, both from the Philippine Islands.

The doves are usually smaller than the pigeons, but the general characteristics are the same. We usually exhibit the following foreign doves: the **Cape Dove,** the **Tambourine Dove,** the **Emerald-spotted Dove,** and the **Senegal Dove** from Africa. The **Yellow-billed Ground Dove** is from Peru. Amethyst doves include the **Buff-headed**, and the **Black-fronted**. Others exhibited are the **Pearl-necked Dove; Cassin's Dove;** the **Picui Dove** from Paraguay; the **Dwarf Turtle Dove;** the **Green-winged Dove;** the **Peaceful Dove; Diamond Dove; White-bellied Plumed Dove** and the **Copperneck** or **Bar-shouldered Dove.**

Of the smaller North American members of the family, we usually exhibit the **Inca Dove** found in Arizona, Texas and Mexico; the **Mexican Ground Dove** of the desert regions of the southwest; the **White-winged Dove** which ranges from Central to South America as well as in Cuba.

This GREAT CROWNED PIGEON was hatched in the San Diego Zoo. Native to New Guinea.



Lories, Cockatoos, Macaws, Parrots, Parrakeets and Lovebirds

All the birds belonging to this large and splendid group can be recognized by the shape of their beaks, which are large, and have the upper mandible extensively curved and hanging far over the lower; in some species the upper mandible is of extraordinary length. The tongue is short, thick, and fleshy, and the structure of this member aids the bird in no slight degree in its singular powers of speaking. Our collection of psittacine birds is one of the finest to be seen in the United States or in Europe.

The **Kea** of the mountains of South Island, New Zealand, is among the most remarkable of parrots. A known meat-eater, it has gained the reputation of being a sheep-killer. Due to resulting persecution, it has become rare in the wild state.

Possessing the most brilliant colors in the entire order, the lories are for the most part small birds. The tongue is provided with a brush-like instead of fringed tip. In distribution, they are confined to the Australian region and to the adjacent, often small, islands. Their food consists largely of soft fruit, but they are also very fond of nectar, which their brushy tongues enable them to secure.

Twenty-three different forms of lory have been exhibited here at one time or another, among them: the **Black Lory,** the **Cardinal Lory,** the **Blue-tailed Lory, Edward's Lory,** the **Yellow-backed Lory, Kuhl's Ruffled Lory, Blue-Mountain Lory, Red-Collared Lory,** and the **Perfect Lory**.

The cockatoos are birds of large size, confined to Australasia, where they extend to the east as far as the Solomon Islands, north to the Philippines, and west as far as Celebes and Lombok. Their most marked external characteristic is the possession of a long frontal crest, which distinguishes them from all other parrots with one or two exceptions.

Among the cockatoos which may be seen here are: the **Great Black Cockatoo,** the **Banksian** or **Red-tailed Black Cockatoo,** the rare little **Helmeted Cockatoo,** the **Greater Sulphur-crested Cockatoo,** the **Citron-crested Cockatoo,** the **Molucca** or **Salmon-crested Cockatoo, Leadbeater's Cockatoo,** the **Bare-eyed Cockatoo,** the **Slender-billed Cockatoo,** and the **Rose-breasted Cockatoo** or **Gallah.** Closely allied is the **Cockatiel,** a small gray parrakeet which is widely distributed in Australia. It has a high crest like that of a cockatoo; hence, the name.

The macaws are mostly inhabitants of South and Central America. They are splendid birds, remarkable for their great size, their very long tails, and the splendid hues of their plumage. The **Hyacinthine Macaw** from the central provinces of Brazil is the largest of all psittacines. It is deep-blue in color, with bright yellow, naked skin at the base of the bill and around the eyes. The **Green-winged** or **Maroon Macaw,** the **Scarlet Macaw,** found from Mexico to Bolivia, the

The LEADBEATER COCKATOO, considered the most beautiful member of the cockatoo family.





Rarest member in our parrot collection is the THICK-BILLED PARROT from the mountains of Southeastern Arizona.

Blue and Yellow Macaw, from Guiana and the Amazon Valley, and the **Military Macaw** are widely distributed and well known as pets.

The conures from tropical America are small parrot-like birds with pointed tails, but feathered faces distinguish them from the Macaws. Our collection includes: the **Jendaya Conure; Petz's Conure;** the **Brown-throated Conure;** the **Black-headed Nanday Conure** and the **White-eared Conure,** inhabitants of Brazil and seldom exhibited. Several young of this species inhabit the cage with the original four. The **Thick-billed Parrot** of Arizona and Mexico is the only parrot which now occasionally occurs in the United States.

Over one hundred species of amazons are known. These are mainly green plumaged parrots whose main characteristic is the possession of a short and broad, rather round tail, about half the length of the wing. They have moderately strong bills and a swollen naked cere. Several species of these American parrots are exhibited in our collection as follows: The **Yellow-naped Amazon,** one of the most popular cage birds; the **Mealy Amazon; Finsch's Amazon;** the **Yellow-fronted Amazon;** the **Blue-fronted Amazon;** the **Double Yellow-headed Amazon;** the **Single Yellow-headed Amazon;** the **Spectacled Amazon;** the **Green-cheeked Amazon; Salvin's Amazon;** the **Blue-crowned Amazon** and the **Orange-cheeked Amazon.**

Rare parrots exhibited here are: the **Red-vented Parrot;** the **Senegal Parrot** from Gambia, western Africa; and the **Philippine Blue-naped Parrot.**

The eclectus parrots are remarkable for their brilliant coloration. The males are grass-green with red sides. Two kinds are exhibited in our collection. The females are scarlet with blue on the sides. The **Red-sided Eclectus Parrot** is from the Papuan islands and has been raised here. The **Solomon Eclectus** is also exhibited.

The caiques are short, stout parrots with very unusual color patterns. They are comical in their actions and notorious for their fighting ability and aggressiveness. Usually we exhibit the **Hawk-headed Caiques** or **Fan Parrot** which ranges from Ecuador to the lower Amazon, probably most abundant in northeastern Brazil.

Sometimes presented in the collection is the **Gray-breasted** or **Quaker Parrakeet,** one of the most interesting members of the parrot family. It is the only one known to build a nest, made up of twigs and sticks. Usually most parrots lay their eggs in hollow trees, making no nest at all. We also exhibit the **Tovi Parrakeets,** the best known members of a small group of green parrakeets, and the **Lineolated Parrakeet.** Among larger parrakeets are the **Blossom-headed Parrakeet,** the male having the purplish head edged with pink and **Bengal Ring-neck Parrakeets** with a rose-red collar circling the neck excepting in front. The **Indian Hill Parrakeet** is a size larger with much the same color scheme but

richer in its coloration. Young have been raised here.

The **Banded** or **Moustached Parrot** has been freely imported and is one of the most popular parrakeets. The **Chinese Derbyan** is one of the most beautiful and one of the rarest.

Australia is well represented with a fine group of parrots which may include the following: the **Barraband,** the **Black-tailed, Princess Alexandra's Parrot,** the **Crimson-wing,** the **King Parrot, Pennant's Rosella,** the **Eastern Rosella,** the **Western Rosella,** the **Pale-headed Rosella, Brown's Rosella, Barnard's Parrot,** the **Yellow-banded Parrot,** the **Port Lincoln Parrot,** the **Pileated Parrot,** the **Blue Bonnet,** the **Red-rump,** the **Hooded Parrakeet** and the familiar **Budgerigar** or **Shell Parrakeet.**

Those who have visited aviaries are doubtless familiar with the pretty little lovebirds, which are so called for the affection which the sexes seem to show for each other. One of the best-known species is the handsome **Peach-faced Lovebird** of southwestern Africa. The general color of lovebirds is green, with the face and neck varying in color. Others in the collection are the **Nyasa Lovebird** and the **Masked Lovebird.**

Cuckoos

The ground cuckoos are birds of rather dull plumage and have powerful legs and feet, adapting them for life on the ground. They have short, rather weak wings. The tail is long in most species. One of the best known members of this group is the **Road-runner** or **Chaparral Cock** of the southwestern United States and northern Mexico. This bird runs with astonishing speed when scared.

Closely related to the cuckoos are the touracos, which are found only in Africa. Best known of the family are the green touracos which are forest birds. Their body plumage is dull green while their wings are deep red. The wing feathers contain a water soluble pigment known as turacin. Two forms are usually to be seen here: **Donaldson's Touraco** and **Hartlaub's Touraco,** both of East Africa.

Trogons

The trogons are to be included in any list of the world's most beautiful birds. They are for the most part jungle dwellers which inhabit the New and Old World tropics. All species are noted for their brilliant plumage, but the **Quetzal** or **Resplendent Trogon** of Southern Mexico and Central America is easily the most spectacular member of its clan. The male of this species is distinguished by streaming, coppery-green "tail" plumes. The **Eared Trogon** of the mountains of Mexico is closely related but lacks the long plumes. The **Cuban Trogon** is a small species with a green back, purplish head, gray breast, and a red vent and bill.

The CUBAN TROGON eats small fruits and insects in tropical forests of South America.





LESSON'S MOTMOT of South America shaves its own tail feathers.

Kingfishers, Motmots, Rollers and Hornbills

The kingfishers form a well-marked group, all of them being remarkable for their long bills and the comparative shortness of their bodies, which give them a peculiar unmistakeable bearing. The well known **Belted Kingfisher** is commonly seen all along the Pacific Coast and in the bay regions. Curiously, the fish-catching kingfishers do not do well in captivity, so very few are ever exhibited. The **Giant Kingfisher** or **Laughing Jackass** is the national bird of Australia.

The motmots are a small group of birds with much of green, blue, cinnamon, and black in their loose-webbed plumage. They usually live in dense forests. These birds are found exclusively in the New World. The bill, which is crow-like in appearance, is provided with saw-like notches which are razor sharp and are probably used in holding the small rodents, which they eat. In most forms the central tail feathers are much longer than the others and terminate in racket-shaped tips. The species represented in our collection is **Lesson's Motmot,** found in Central America.

Hornbills stand high among Nature's more grotesque creations. Their enormous bills, which in some species support large casques or helmets, their conspicuous eyelashes, and their large size all contribute to a spectacular appearance. Their bills and casques are not as heavy as they look, having a light "honeycomb" internal structure. Hornbills inhabit the forests of the warmer parts of the Old World from Africa, through southern Asia and the East Indies to the New Guinea region.

One of the largest is the **Concave-casqued Hornbill** of India and Malaya. The species has nested in the zoo, exhibiting the nest-plastering technique for which hornbills are noted. The female enters a hole in a hollow tree and with the help of the male walls up the nest opening with excrement and mud except for a small aperture just large enough to permit the male to feed her. Throughout the incubation period and the infancy of the chicks, the female is safe from predators. When the young are old enough to fly, they and the mother emerge from the nest. Other species of tree-dwelling hornbills which have been exhibited here include the **Philippine Rufous Hornbill,** the **African Red-billed Hornbill,** the **Malayan Helmeted Hornbill** and the **Papuan Hornbill** which occurs from the Moluccas to the Solomons. The African ground hornbills are large terrestrial birds with black and white plumage and black bills and casques. The **North African Ground Hornbill** is shown here.

The rollers are medium-sized, insectivorous birds which inhabit the warmer regions of Africa, southern Europe, and Asia. The **Indo-Chinese Blackbilled Roller** is the species shown here.

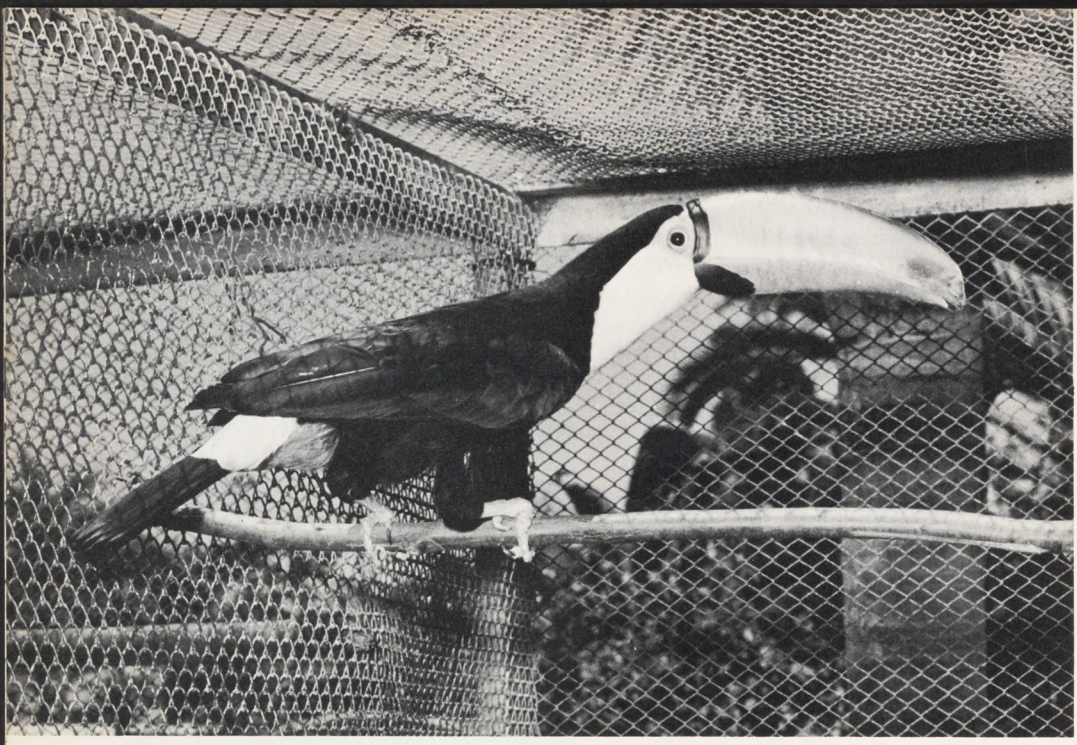
Barbets, Toucans and Woodpeckers

The birds of this group differ greatly from each other in general appearance, but they share many characteristics, the most important of which is that the toes (two directed forward and two backward) are moved by an arrangement of muscles found in no other bird.

The curious birds that go by the name of toucans are no less remarkable than the hornbills, their beaks being as large in some species, and their colors are far superior. They are confined to the New World, and are distributed more or less abundantly over the wooded districts from southern Mexico to northern Argentina. Toucans are most numerous in the great forest regions of the Amazon. The large, painted bills, resembling the claws of a lobster, and the long fringed tongues lying the entire length of the beak are probably well known to everyone interested in birds. The huge beak is very light in weight in comparison to its size. The outer wall of the bill is said to be one-thirtieth of an inch in thickness. In captivity these birds live well on fresh fruits. They are fed grapes, bananas, apples, pears, soaked raisins, oranges, insects, hard-boiled eggs, occasionally a mouse, and bread and milk. They have lettuce as a green food. The plumage is brilliant, the black or green bodies being ornamented with red, orange, white and blue.

The CONCAVE-CASQUED HORNBILL from India is the largest member of the Hornbill family.





Largest species of toucan is the TOCO TOUCAN from Argentina.

Among the species to be seen here from time to time are the **Toco Toucan, Swainson's Toucan,** the **Ariel Toucan,** the **Short-keeled Toucan,** the **Emerald Toucanet,** the **Collared Aracari** and the **Black-banded Aracari.**

The Woodpeckers are not easy to keep in captivity because of their specialized diet of insects and ants.

The familiar little **Downy Woodpecker** found along the coasts and in the valleys of California may be seen occasionally in the zoo. The **Golden-fronted Woodpecker** of Texas and northern Mexico has been represented in our collection. Our native **Western Red-shafted Flicker** is a woodpecker that has largely resorted to feeding on the ground, chiefly on ants. This flicker is predominantly light-brown, with markings of black, including a crescent on the breast. There is a red band on the nape and the wings are conspicuously marked with red. He is a friendly neighbor and it is interesting to watch him taking a dust bath in one of the large flying cages.

Perching Birds

The perching birds form the largest avian order. The group contains approximately seventy-five families, and it is said that half the known forms of birdlife belong to the order. Although hundreds of species have been exhibited in the San Diego Zoo, only representative examples can be mentioned here due to space limitations.

The Cotinga family of the American tropics and subtropics contains many brilliantly colored birds. Best known is the **Orange Cock of the Rock** of northeastern South America. It is characterized by orange and brown plumage, a half-moon crest, and wavy feathers on the back. The larger **Scarlet Cock of the Rock** of western Colombia is red and gray, and its crest is thick and full. The **Apricot Cock of the Rock** of Ecuador and Peru is similar but its coloring is more delicate. The **Bare-throated Bellbird** is a white cotinga native to southeastern Brazil. Its voice resembles a clear ringing bell.

The family Corvidae contains jays, crows and magpies, many of which have been



BANDED ARACARI are fruit eating tropical birds, from Mexico to Panama.

shown here. Among the more unusual forms are the **Green Jay** and the **Talamanca Jay,** of the American tropics; California's **Yellow-billed Magpie**; the **Formosan Blue Pie;** and the **Red-billed Pie** of southeastern Asia. Among the loveliest are the coral-billed, turquoise and brown kittas of the Himalayas; the **Short-tailed Kitta** has been exhibited. Local species, including the **Western Raven** and the **Common Crow,** are usually displayed.

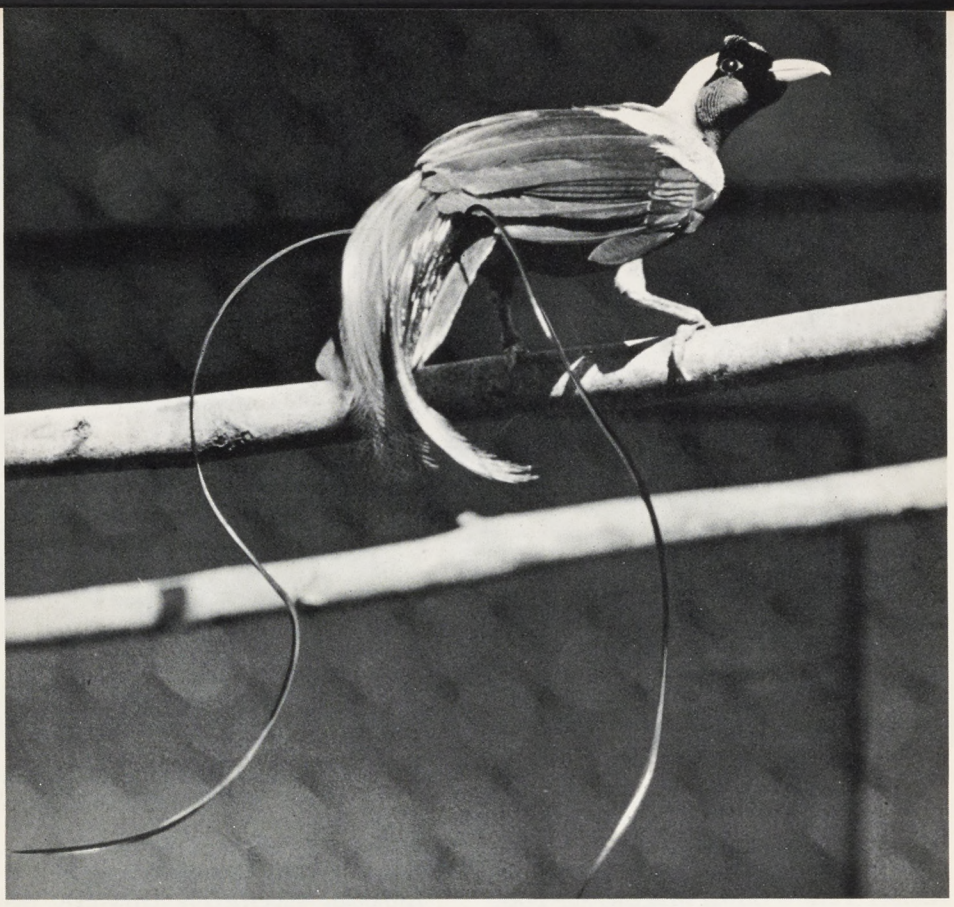
Although superficially crow-like, the **Black-backed** and the **White-backed Piping Crows** are classified in a separate family, Cracticidae. They are native to Australia. The **European Jackdaw** is an interesting bird with silver eyes.

The BARE-THROATED BELL BIRD from Brazil is famed for its loud ringing notes in breeding season.



A giant Australian magpie, the WHITE-BACKED PIPING CROW.





Two barbless ribbon-like tail feathers characterize the RED BIRD OF PARADISE.

The birds of paradise of New Guinea and Australia are remarkable not only for their colorful plumage but also for their unique courting displays. Species shown here have included **Meyer's Sickle-billed Bird of Paradise, Princess Stephanie's, White-flanked Six-plumed, Magnificent, Count Salvadori's, Lesser, Red, Prince Rudolph's Blue** and the iridescent **Black Manucode.**

The bower birds, sometimes united in a single family with the birds of paradise, are known best for their peculiar courtship habits. The **Satin Bower Bird** of Australia constructs a bower of twigs that is used only for courting, not nesting. Other species include the black and gold **Regent Bird** and the **Green Catbird**, both of Australia.

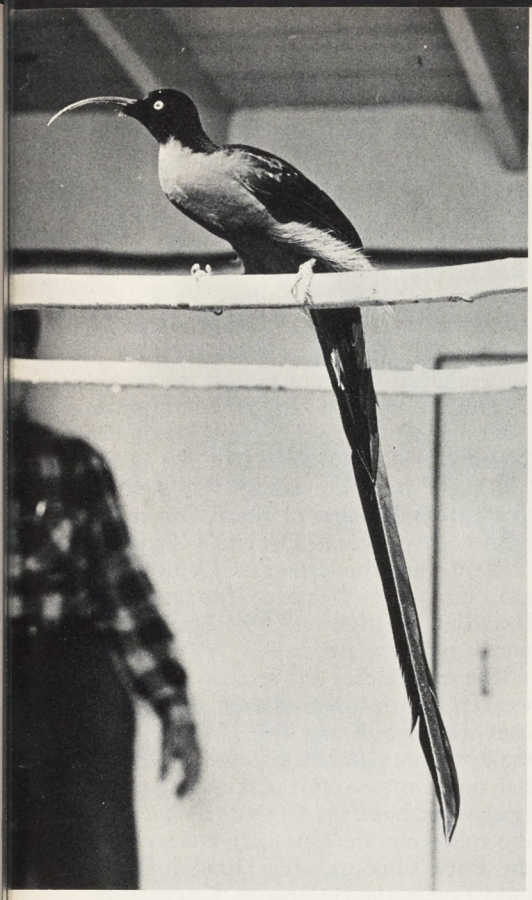
The diminutive titmice inhabit both hemispheres. The **Red-sided Titmouse** of Japan is popular as a cage bird.

The babblers are well represented throughout the warmer parts of the Eastern Hemisphere. The jay thrushes of Asia are large, showy species like the **White-crested.** Closely related is the **Spectacled Laughing Thrush** of China. The **Red-billed Hill-tit** or **"Chinese Nightingale"** and the **Silver-eared Hill-tit** are small and brightly colored.

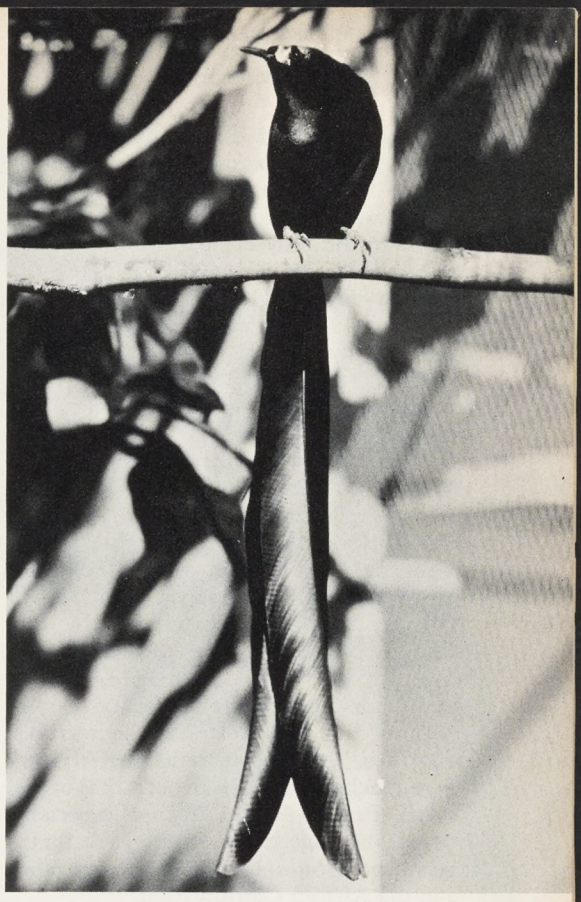
The bulbuls of Asia and Africa are favorite cage birds, one exhibited here is the **White-eared** of India.

The thrasher family of the New World is noted for its melodious mimics. Best known locally are the **Western Mockingbird** and the **California Thrasher.**

Thrushes occur throughout most of the world. The **Shama** and the **Dhyal-bird** or



MYER'S SICKLE-BILL BIRD OF PARADISE is native to the mountains of Southeastern New Guinea.



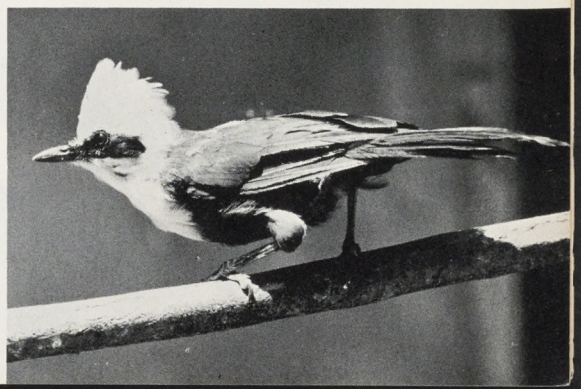
PRINCESS STEPHANIE'S BIRD OF PARADISE from New Guinea is satin black and green in color with chestnut breast band.

"Magpie Robin" are noted songsters native to southeastern Asia, while the **Blackbird,** the **Fieldfare** and the **European Redwing** inhabit Europe. The Costa Rican **Nightingale Thrush** occurs in Central America, while the Cuban **Red-legged Thrush** is found on Cuba. Other thrushes include our native robins and bluebirds. Occasionally exhibited in the zoo is the **Slate-colored Solitaire** of Mexico.

The waxwings are tan, crested little birds. The **Cedar Waxwing** is limited to the New World, but the larger **Bohemian Waxwing** occurs in Europe as well.

The starlings and mynahs inhabit the Eastern Hemisphere. One group, known as glossy starlings, includes the **Blue-eared Glossy Starling,** the **Purple,** the **Superb** and the **Long-tailed Glossy,** all of Africa. Another group consists of the Asiatic hill mynahs, shiny black birds with yellow wattles, the **Greater Hill Mynah,** the **Javan,** and the **Lesser.** Their ability to mimic is unsurpassed. Others include the similar **Black-winged Starling** of Java, the **Gray-**

The HIMALAYAN WHITE-CRESTED JAY THRUSH is one of the more beautiful foreign jays.



backed Starlet of China, the Philippine **Coleto,** and the **Pagoda Mynah** of India.

The minute honey-creepers or "sugar-birds" are found in the American tropics. They are brightly colored and have long slender bills. Best known is the **Blue** or **Yellow-winged Honey-creeper.**

Members of the weaver bird family are superficially similar to our sparrows and finches although not closely related. Weavers, which are seed eaters, are widely distributed in the warmer regions of the Old World. Most spectacular are the African Whydahs, the males of which have long flowing tails during the breeding season: the **Pin-tailed** and the **Paradise Whydahs** are small birds, while **Jackson's Whydah** of Kenya is considerably larger. Of the typical African weavers, the **Orange Bishop-bird** and the **Red-billed Weaver** are usually exhibited. Others shown may include the munias or mannikins of Asia and Australia, the waxbills of Africa, Asia and Australia, the **African Fire-finches,** and the parrot finches of the south Pacific. Three finches especially popular as cage birds are the **Java Sparrow,** the **Gouldian Finch** of Australia, and the African **Cordon Bleu.**

The oriole family contains many familiar birds: blackbirds, grackles, and troupials. Most members have sharp pointed bills and their plumage is usually black, often with red, yellow or orange. The true troupials include the **Troupial** or "**Bugle Bird,**" the **Scott's Oriole,** the **Yellow-tailed Oriole,** the **Arizona Hooded Oriole,** the **Bullock's Oriole** of South America as well as our native orioles. **Brewer's Blackbird,** the **Dwarf Cowbird** and the **Red-winged Blackbird** are also members of the family.

Another New World family is that of the tanagers which are most abundantly represented in the tropics. Most species are brightly colored. The euphonias are small tanagers, one of the prettiest being the **Blue-hooded** of Mexico, but the handsomest of the entire family may well be the **Superb Tanager** of Brazil. Others exhibited may include **Darwin's Tanager** of Peru, the **Blue-crowned Chlorophonia,** our own **Western Tanager,** the **Brazilian Scarlet** and the **Maroon** of northern South Africa.

The true finches and sparrows, like the weavers, are mainly seedeaters. They have cone-shaped bills and range in size from the **Pyrrhuloxia** of Mexico and the **Cardinal** down to the little siskins and goldfinches and buntings. Of those shown here, the following are especially noteworthy: the **Pope Cardinal,** the **Guadalupe Island Finch,** the **Galapagos Finches,** the **Cuban Grassquit,** the **Guadalupe Junco,** and the **Desert Sparrow.** The **Gray Singing Finch** and the **Green Singing Finch** are from Africa. The **European Goldfinch** and **Hooded Siskin** (which is bright orange with a black head and from Venezuela) are easily kept and have always been popular as cage birds. So many species are exhibited in this family that only a few may be mentioned.

The PHILIPPINE COLETO, a bald-headed starling from the Philippine Islands.





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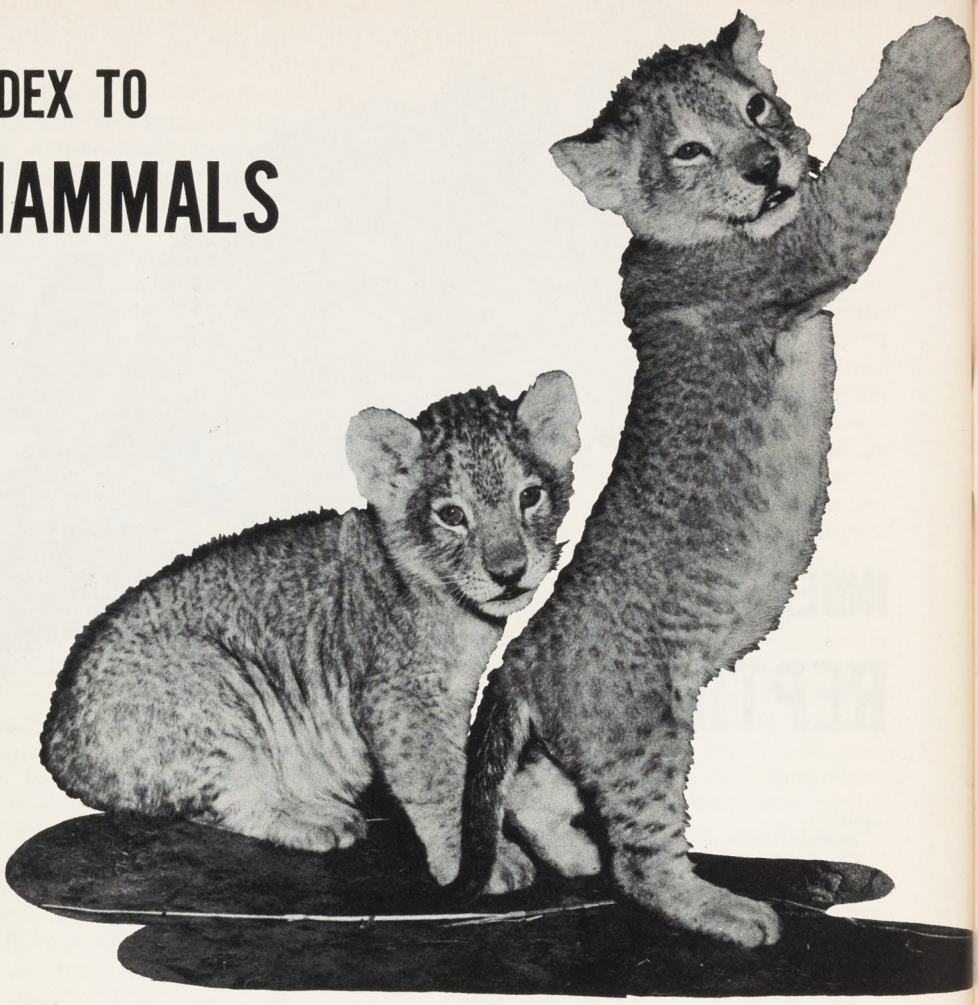
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Superb Glossy (*Spreo superbus*)..... 95

Stilt
American Black-necked
(*Himantopus mexicanus*)..... 85
Brazilian (*Himantopus h. melanurus*)..... 85

Stork
American Jabiru (*Jabiru mycteria*) 68
Black-necked Jabiru (*Xenorhynchus a. asiaticus*) 68
European White (*Ciconia c. ciconia*) 68
Indian Adjutant (*Leptoptilos dubius*) 68
Javan Adjutant (*Leptoptilos javanicus*) 68
Marabou (*Leptoptilos crumeniferus*) 68
Shoebill or Whale-head (*Balaeniceps rex*) 68
Woolly-necked (*Dissoura episcopus*) 68

Swan
Black-necked (*Cygnus melanocoryphus*) 70
Black (*Cygnus atratus*) 72
Coscoroba (*Coscoroba coscoroba*) 72
Mute (*Cygnus olor*) 70
Whistling (*Cygnus columbianus*) 72
Whooper (*Cygnus cygnus*) 70

Tanager
Blue-crowned Chlorophonia (*Chlorophonia occipitalis*) 96
Blue-hooded (*Tanagra elegantissima*) 96
Brazilian Scarlet (*Ramphocelus brasilinus*) 96
Darwin's (*Thraupis bonariensis darwini*) 96
Maroon (*Ramphocelus carbo*) 96
Superb (*Tanagara cayana flava*) 96
Western (*Piranga ludoviciana*) 96

Teal
Blue-winged (*Anas discors*) 74
Cinnamon (*Anas cyanoptera*) 74
Garganey (*Anas querquedula*) 74
Green-winged (*Anas crecca carolinensis*) 74

Thrasher, California (*Toxostoma redivivum*) 94

Thrush
Costa Rican Nightingale (*Catharus melpomene costaricensis*) 95
Cuban Red-legged (*Mimocichla rubriceps*) 95
Dhyal-bird (*Copsychus saularis*) 94
European Redwing (*Turdus musicus*) 95
Fieldfare (*Turdus pilaris*) 95
Shama (*Kittacincla malabaricus*) 94
Spectacled Laughing (*Trochalopteron canorum*) 94

Tinamou
Crested (*Eudromia elegans*) 66
Peruvian (*Nothoprocta ornata*) 66
Rufous (*Rhychotus rufescens*) 66

Titmouse, Red-sided (*Parus varius*) 94

Touraco
Donaldson's (*Turacus leucotis donaldsoni*) 89
Hartlaub's (*Turacus hartlaubi*) 89

Toucan
Ariel (*Ramphastos vitellinus ariel*) 92
Short-keeled (*Ramphastos sulfuratus brevicarinatus*) 92
Swainson's (*Ramphastos swainsoni*) 92
Toco (*Ramphastos toco*) 92

Toucanet, Emerald (*Aulacorhynchus prasinus*) 92

Tree Duck
Black-bellied (*Dendrocygna a. autumnalis*) 72
Eyton's (*Dendrocygna eytoni*) 72
Fulvous (*Dendrocygna bicolor*) 72
Gray-necked (*Dendrocygna autumnalis discolor*) 72
Lesser Fulvous (*Dendrocygna arcuata*) 72
West Indian (*Dendrocygna arborea*) 72

Trogon
Cuban (*Priotelus temnurus*) 89
Eared (*Euptilotis neoxenus*) 89
Quetzal or Resplendent (*Pharomachrus mocino*) 89

Trumpeter
Dusky (*Psophia v. obscura*) 85
Green-winged (*Psophia v. viridis*) 85
White-winged (*Psophia l. leucoptera*) 85

Turkey
Brush (*Alectura lathami*) 78
Merriam's (*Meleagris gallopavo merriami*) 82
Ocellated (*Agriocharis ocellata*) 82

Turnstone, Black (*Arenaria melanocephala*) 85

Vulture
Black (*Coragyps atratus*) 75
Griffon or Fulvous (*Gyps fulvus*) 76
King (*Sarcoramphus papa*) 75
Pondicherry (*Torgos calvus*) 76
Turkey or Turkey Buzzard (*Cathartes aura septentrionalis*) 75

Waxwing
Bohemian (*Bombycilla garrula*) 95
Cedar (*Bombycilla cedrorum*) 95

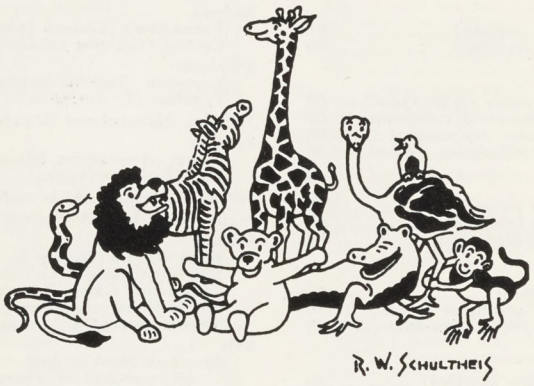
Weaver, Red-billed (*Quelea quelea*) 96

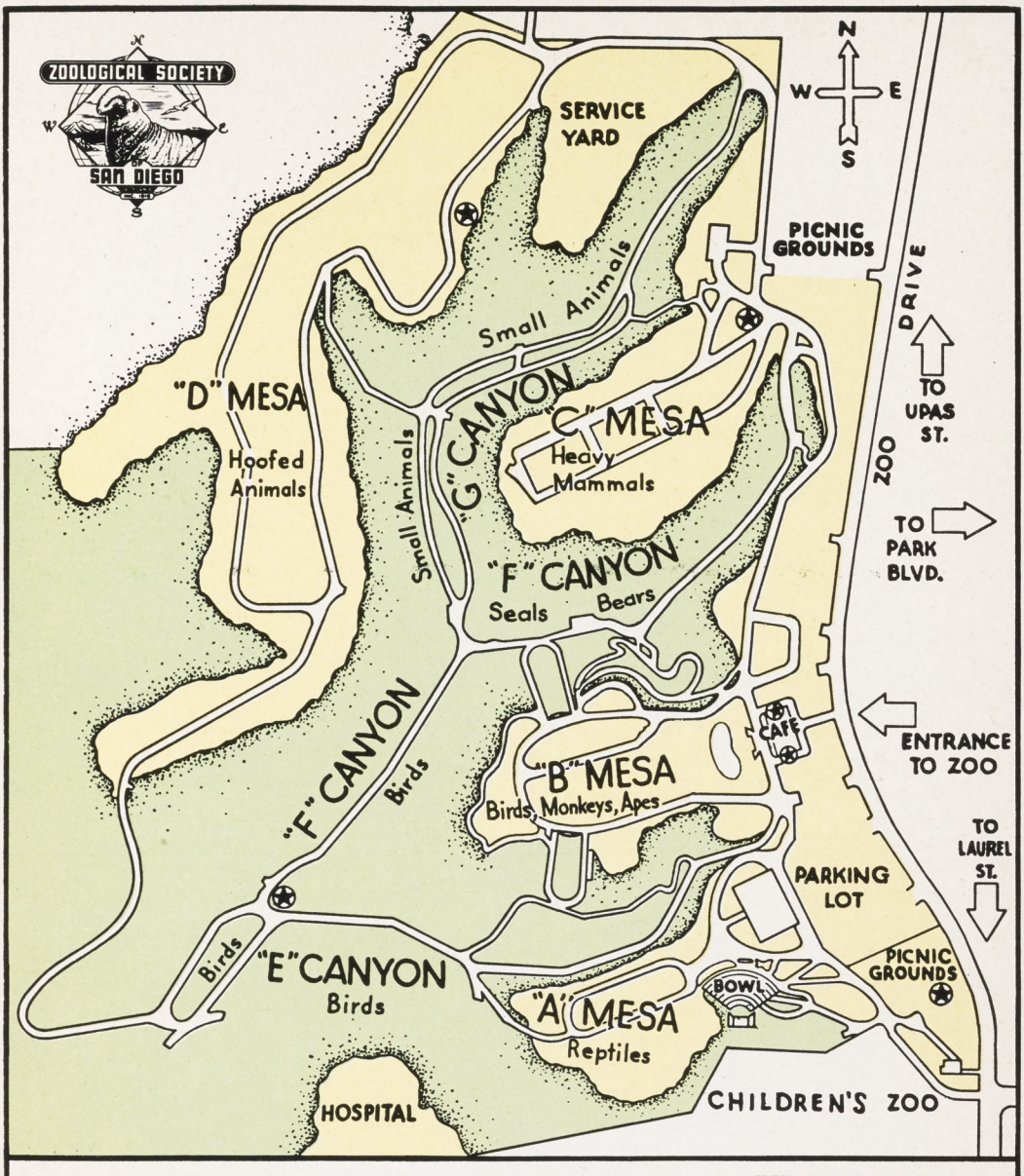
Whydah
Jackson's (*Drepanoplectes jacksoni*) 96
Paradise (*Sternanura paradisea*) 96
Pin-tailed (*Vidua macroura*) 96

Widgeon
Baldpate or American (*Anas americana*) 74
Chiloe (*Anas sibilatrix*) 74
European (*Anas penelope*) 74

Willet (*Catoptrophorus semipalmatus inornatus*) 85

Woodpecker
Downy (*Dryobates pubescens turati*) 92
Golden-fronted (*Centurus aurifrons*) 92





SKETCH MAP OF

SAN DIEGO ZOOLOGICAL GARDEN

BALBOA PARK



PATHWAYS ARE SHOWN THUS

REST ROOMS ARE INDICATED BY STARS

"E" CANYON
Cranes, Herons, Ducks
Geese, Swans, Ostriches

"F" CANYON
Bears, Lions, Tigers
Sea Mammals, Large Birds

"G" CANYON
Leopards, pumas, panthers on east and south sides of roadway. Small cats, foxes, swine, and canines on north and west sides of roadway

"A" MESA & WEGEFORTH BOWL
Reptiles, Snake House
Turtles, Lizards, Crocodiles

"B" MESA
Primates, Cage Birds
Monkeys, Apes, Baboons

"C" MESA
Elephants, Giraffes, Tapirs
Hippopotamuses, Rhinos

"D" MESA
Hoofed Animals, Sheep
Antelope, Deer,



SAN DIEGO ZOO

You will notice that the Zoo is divided by a series of canyons into four mesas. The four mesas, starting with the south border of the Zoo, are lettered with the first four letters of the alphabet and are called A-Mesa, B-Mesa, C-Mesa and D-Mesa. The canyons are lettered, beginning with the one farthest south, E-Canyon, F-Canyon and G-Canyon.

MESAS

A-Mesa: This mesa is the location of the reptile collection. The area west of the reptile house is given over to open lizard pits, turtle and tortoise pens, and alligator and crocodile pools. The Wegeforth Bowl, an open amphitheatre for animal acts, is also located on A-Mesa.

B-Mesa: This is where the primates, including small monkeys, are housed. The Apes and Baboons are shown on the north half of B-Mesa. Hundreds of miscellaneous birds are also exhibited on B-Mesa.

The two great Flying Cages also can be viewed from this mesa. On the south is the Shore and Marsh Bird Cage, known as the Scripps Cage; on the north the cages for Birds of Prey.

C-Mesa: This is the Heavy Mammal mesa where tapirs, giraffes, elephants and hippopotamuses are on exhibit.

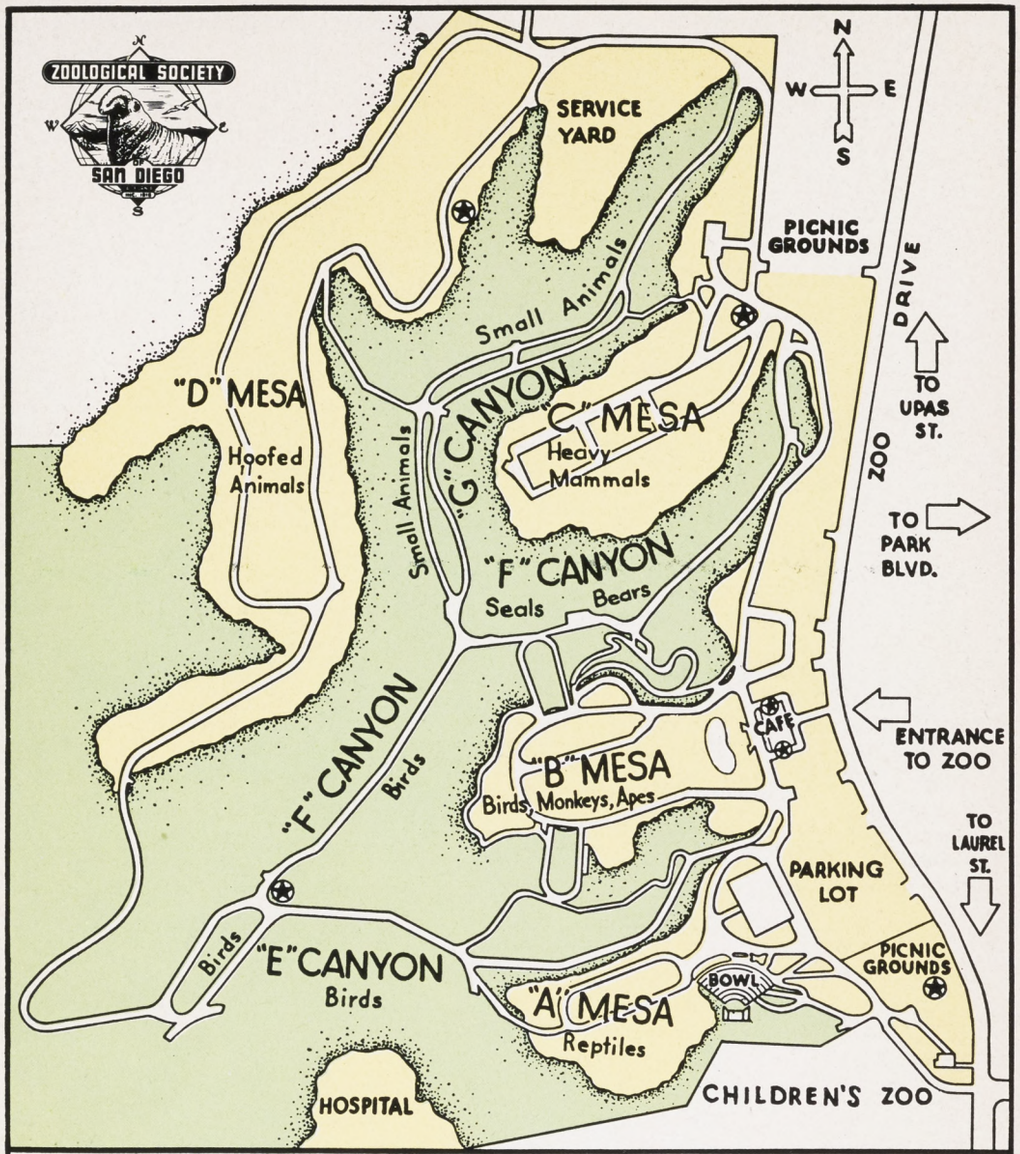
D-Mesa: Hoofed animals, including sheep, goats, antelope, deer, bison, moose and elk, are exhibited here.

CANYONS

E-Canyon: This is a wild bird sanctuary as well as exhibit area where ducks, geese, swans and ostriches are located. On the north side of the road are open pens for cranes and storks.

F-Canyon: This canyon is a series of open grottoes for bears, lions, and tigers, divided from each other by a series of pools for the exhibition of sea mammals.

G-Canyon: The leopards, pumas, black panthers, and jaguars are housed on the east and south sides of G-Canyon; the small cats, foxes, swine and canines are housed along the north and west sides of the roadway.



"E" CANYON
Cranes, Herons, Ducks
Geese, Swans, Ostriches

"F" CANYON
Bears, Lions, Tigers
Sea Mammals, Large Birds

"G" CANYON
Leopards, pumas, panthers on east and south sides of roadway. Small cats, foxes, swine, and canines on north and west sides of roadway

SKETCH MAP OF

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Elephants, Giraffes, Tapirs
Hippopotamuses, Rhinos

"D" MESA
Hoofed Animals, Sheep
Antelope, Deer,